DYEING PROPERTIES
DIRECT DYESTUFFS

Dyestuff Makers Since 1859


SOUTHEASTERN MASSACHUSETTS UNIVERSITY
UNITATE · 1895 · FORTIOR

DYEING PROPERTIES

DIRECT DYESTUFFS

Printed in Switzerland

PREFACE

Manufacturers of dyestuffs have traditionally confined the published data on their products to fastness properties and certain characteristics such as solubility and staining of effect threads. In general, systematic information on the dyeing properties of broad ranges of dyestuffs has not been available, principally because of the complicated factors involved and the diverse nature of the textile industry.

Geigy has pioneered in this field by publishing in England and on the Continent, carefully prepared volumes of graphs of the important variables that influence the application of Direct dyestuffs. This radical departure from technical literature previously available for the dyer's guidance met with approval exceeding all expectations, and requests for copies came from all parts of the world. Prompted by such an enthusiastic reception abroad, this North American edition has been prepared with confidence as to its value for dyers, textile chemists and students of the art of dyeing.

As initially distributed, this volume contains graphs depicting the dyeing characteristics of Cuprophenyl, Solophenyl and Diphenyl Fast dyestuffs. However, the semi-loose leaf binding will permit the periodic insertion of additional pages for our new products and for members of the important Diphenyl and Diazophenyl classes of dyestuffs.

Geigy Dyestuffs
Division of Geigy Chemical Corporation

INTRODUCTION

Since the introduction of Congo Red in 1884, a very large number of Direct dyestuffs for cellulosic fibers have made their appearance until today they probably comprise the largest group of dyestuffs. Although they possess the one common property of dyeing unmordanted cotton directly from a simple aqueous dye bath, it is generally recognized that Direct dyestuffs vary widely with respect to the conditions of application necessary for practical exhaustion and level results.

The accomplished dyer of cotton and viscose rayon has a thorough knowledge of the working properties of the Direct dyestuffs he most frequently employs. From observations during dyeing processes and by repeated inspections of completed dyeings, he knows which dyes yield satisfactory results in his equipment, those requiring careful control of salt and temperature, those that are more desirable for shading and those best used only in the initial charge. He is familiar with relative drawing rates by noting the slower or more rapid exhaustion of components in a mixture of dyestuffs, and the varying temperature characteristics and salt sensitivities are brought to his attention as he watches the dyeings proceed and as he inspects partially exhausted dye baths.

However, when confronted with a necessity of employing dyestuffs he has not previously used, the dyer needs an understanding of their dyeing properties relative to those with which he is familiar; otherwise he must acquire this knowledge by production experience with considerable risk of spoiled goods.

Although it is a credit to a dyer's ingenuity and ability that perfect work is usually accomplished with scanty information, in these instances a study of the graphs for the dyestuffs involved can be of great value.

Although at first glance the graphs may seem unduly complicated and theoretical, more careful examination and understanding will alter this first impression to a realization that they represent the maximum simplification of the subject

compatible with overall usefulness. Graphs II to VI inclusive are concerned with one variable each, i. e. Temperature, Salt, Liquor Ratio, Drawing Rate and Migration respectively whereas Graph I combines both Time and Temperature.

The succeeding pages explain in detail how the data for plotting each graph is obtained. In addition there are several illustrations of how the graphs can be of assistance in solving practical dyeing problems.

EXPLANATION OF THE GRAPHS

Among the important factors governing the application of Direct dyestuffs are:-

Rate of Exhaustion	Characteristic Properties
Migration	of Dyestuffs
Time of dyeing	External factors capable of control
Temperature	
Salt concentration	
Ratio of dye bath to material	

These variables are illustrated by a series of six graphs for each product. In all cases, the dyestuff concentrations corresponding to one hundred percent on the vertical axes are those required to yield depths of shades equivalent to those of the Auxiliary Types employed for fastness testing in Europe. As a result, the data for different dyestuffs can be examined with assurance that comparisons are made at approximately equal color value.

GRAPH I — RATE OF EXHAUSTION
(Time and Temperature Combined)

Graph I traces the behaviour of the dyestuff during a typical dyeing process lasting 1½ hours. The time and temperature are shown on the horizontal axis. The maximum depth of shade attainable under optimum conditions is represented

as 100% and corresponds to practically complete exhaustion. Thus this graph illustrates the rate of absorption of the dyestuff in a dyeing procedure wherein:

A) The temperature of the dye bath is gradually raised from 104° F. to 195° F.
B) The dyeing is continued for 15 minutes at 195° F. and the temperature is then raised to 200° F. in 15 minutes.
C) The dye bath temperature is finally allowed to cool to 160° F. in 15 minutes.

The continuous heavy line refers to cotton and the curve made from a series of dashes shows the dyestuff's behaviour toward viscose rayon staple fiber.

Where the addition of 0.5 grams of soda ash per liter (approximately 1.5% on the weight of the cotton) has an appreciable effect on the drawing rate of a particular dyestuff, the course of the alkaline dyeing for cotton is shown by a dash and dot line.

In all cases, Graph I has been prepared with 5 grams of anhydrous Glauber's Salt per liter of dye bath (15% on weight of material) at a liquor ratio of 30 : 1. The behaviour of the dyes is, therefore, directly comparable.

GRAPH II — TEMPERATURE

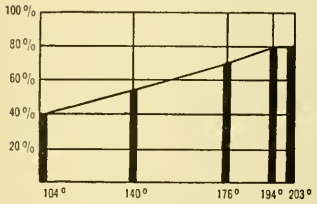
The influence of temperature on exhaustion has been determined by making dyeings on cotton yarn for 90 minutes at five different temperatures with 5 g/l anhydrous Glauber's Salt. Examination of these graphs reveals that Direct dyestuffs can be divided into three classifications, i. e.:

(1) Those showing gradual and progressive affinity with rising temperature.
Example: Solophenyl Blue 10 GL
(2) Dyestuffs with maximum affinity at low temperatures.
Example: Diphenyl Fast Yellow C5GL Conc.

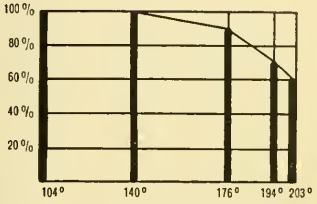
(3) Dyestuffs with progressively greater affinity up to 175°—195° F., but with a drop in substantivity at higher temperatures.

Example: Diphenyl Orange 4G Conc.

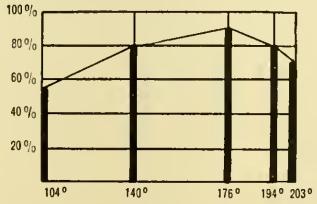
Illustrations



(1)
Solophenyl Blue 10 GL



(2)
Diphenyl Fast Yellow C5GL Conc.



(3)
Diphenyl Orange 4G Conc.

GRAPH III — SALT

The very important salt factor or sensitivity is shown by plotting the exhaustion obtained with five different salt concentrations when dyeings are made on cotton yarn for 90 minutes at 195° F.

Direct dyestuffs can be divided into three broad groups according to their salt sensitivities and salt requirements.

(1) Those exhausting 50% or more in the absence of salt, and giving practically exhausted baths with 5—10 grams per liter of salt.

Example: Solophenyl Yellow FFGL

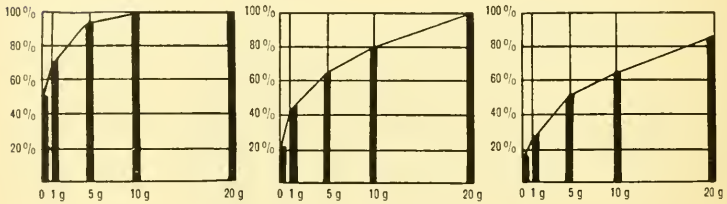
(2) Those showing approximately 20—30% exhaustion in the absence of salt and progressive increase in exhaustion as the salt concentration is raised to 20 g/l.

Example: Diphenyl Fast Blue GLN Conc.

(3) Those with very low substantivity without salt and only moderate increase in exhaustion with rising salt concentration.

Example: Solophenyl Fast Blue Green BL

Illustrations



(1) Solophenyl Yellow FFGL

(2) Diphenyl Fast Blue GLN Conc.

(3) Solophenyl Fast Blue Green BL

It should be noted that the salt concentration used for all graphs except Graph III has been held constant at 5 grams per liter (15% on weight of material) regardless of whether or not this is sufficient for exhaustion. By this procedure, the graphs for different dyestuffs are comparable and a clear picture of their relative behaviour is possible.

Anhydrous Glauber's Salt has been used to prepare the graphs. Similar results are obtained with common salt.

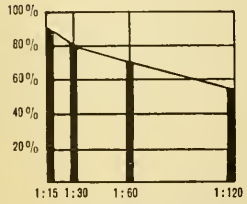
GRAPH IV — RATIO OF DYE BATH TO MATERIAL

These graphs have been prepared by dyeing cotton yarn in four different dye baths at 195° F. for 90 minutes with liquor ratios varying from 15:1 to 120:1. In all cases, the salt concentration has been held constant at 5 g/l anhydrous Glauber's salt. It is to be noted that the salt concentration has not been calculated on the weight of the material.

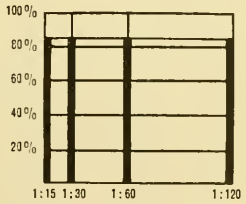
Therefore, Graph IV shows the effect of liquor ratio on exhaustion independent of the salt concentration. The graphs show that the exhaustion of most Direct dyestuffs falls off when applied in long dye baths although there are a few exceptions.

(1) Those exhibiting marked decrease in substantivity with increase in liquor ratio.
Example: Solophenyl Red 6BL
(2) Those little affected by liquor ratio.
Example: Formal Yellow GR Conc.

Illustrations



(1)
Solophenyl Red 6BL



(2)
Formal Yellow GR Conc.

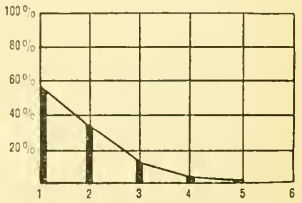
GRAPH V — RATE OF EXHAUSTION

Graph V is a measure of the speed of drawing or rate of exhaustion on cotton at 195° F. with a liquor ratio of 30:1 and a salt concentration of 5 g/l anhydrous Glauber's Salt. The graph has been made by introducing undyed yarn into the same dye bath every ten minutes so that a steep slope indicates a rapid drawing color and a more horizontal graph results from a slow drawing product. A horizontal arrow, e. g. in the case of Solophenyl Brown BL, indicates that the dye bath is not completely exhausted in this test. Three contrasting examples are:

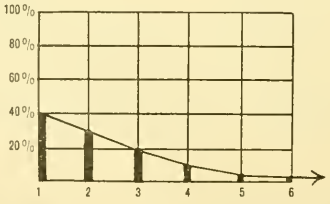
(1) Fast drawing — Example: Diphenyl Fast Bordeaux BC
(2) Medium drawing — Example: Solophenyl Red 6BL
(3) Slow drawing — Example: Solophenyl Brown BL

Illustrations

(1)
Diphenyl Fast Bordeaux BC



(2)
Solophenyl Red 6BL



(3)
Solophenyl Brown BL

GRAPH VI — MIGRATION (LEVELLING)

The migration graphs have been prepared by introducing dyed and undyed cotton into a bath containing no dyestuff and running at 195°F. for 90 minutes with 5 g/l anhydrous Glauber's salt (15% on weight of material). Two curves are plotted against time, one (at top) for the dyestuff retained by the dyed yarn and one (at bottom) for the color transferred to the undyed cotton. The nearer and sooner the two curves approach, the greater is the migrating (levelling) tendency of the dyestuff.

The wide difference in behaviour of Direct dyestuffs in this respect is exemplified by:

(1) High migration

Example: Diphenyl Fast Red 5BL Supra I

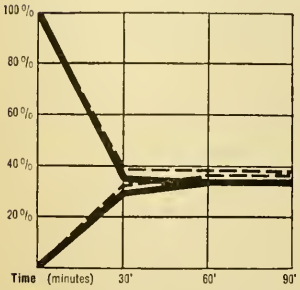
(2) Medium migration

Example: Diphenyl Fast Scarlet 8B Conc.

(3) Low migration

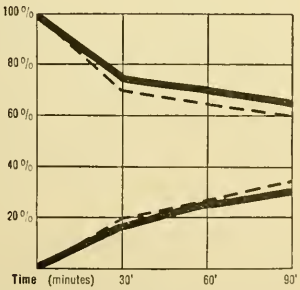
Example: Solophenyl Blue 3GL

Illustrations



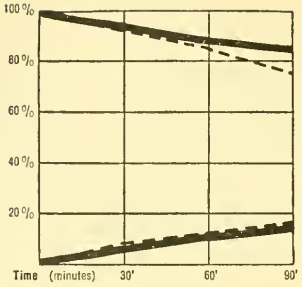
(1)

Diphenyl Fast Red 5BL Supra I



(2)

Diphenyl Fast Scarlet 8B Conc.



(3)
Solophenyl Blue 3GL

CLASSIFICATION OF DIRECT DYESTUFFS BY DYEING CHARACTERISTICS

Two application characteristics of Direct dyestuffs are fundamental, namely, the tendency to draw more or less rapidly and to migrate at high temperatures during the dyeing operation. Therefore, when selecting Direct dyestuffs to fit a certain dyeing procedure or designing a dyeing procedure to fit a dyestuff, the graphs showing the rate of exhaustion and the degree of migration are the first to be considered. This approach has received wide recognition through its acceptance in England by the Society of Dyers and Colorists as a method for classifying Direct dyestuffs into three classes, viz: -

Class A — Rapid drawing, high migration
Class B — Slow drawing, low migration
Class C — Rapid drawing, low migration

Once the drawing and migration properties are clear, the means and likelihood of external control can be ascertained from the graphs on the salt and temperature properties. It is readily apparent that the care required in dyeing increases from Class A to Class B to Class C. Those dyestuffs in Class A are the most

foolproof in that unevenness likely to occur in the initial stages of dyeing is likely to correct itself through migration, especially if salt is held to the minimum and if the dyeing temperature is kept high to favor migration. In many instances, Class B dyestuffs can be applied by commencing dyeing at high temperatures without salt, with additions of salt being made in small quantities for gradual exhaust.

Class C dyestuffs usually require careful control of both temperature and salt for their successful application. Thus dyeing is best started at low temperatures without salt, the temperature is slowly raised, and exhaustion is completed by careful additions of small quantities of salt after a period of dyeing at high temperatures.

Class A — Diphenyl Fast Yellow C5GL Conc.
Class B — Solophenyl Brown GRL
Class C — Solophenyl Blue 3GL

PRACTICAL EXAMPLES ILLUSTRATING SOME USES OF THE GRAPHS

Example I - Considerations involved in dyeing closely woven cotton and rayon fabrics with Class C dyestuffs.

Tightly twisted yarns and closely woven fabrics often present problems of penetration. Obviously, dyestuffs with good migrating properties have the best penetrating ability and slow rate of drawing is another advantage. Conversely, levelling and penetration are particularly difficult in the cases of rapid drawing dyestuffs with poor migration.

However, every dyer is presented with problems of securing fastness properties that necessitate the use of dyestuffs with dyeing characteristics short of ideal for particular materials.

In this respect, Solophenyl Dark Green GBL is unique as a Direct olive shade of Green with very high light fastness that is not reduced by anticrease finishes. Most other dyestuffs, either alone or in combination, are either insufficiently fast to light originally, or are quite unsuited for the popular urea formaldehyde resin finish.

However, examination of the graphs for Solophenyl Dark Green GBL shows that the characteristics for penetration and levelling are lacking in that it draws rapidly (Graph V) and has relatively poor migrating properties (Graph VI). In contrast to many Direct dyestuffs, the addition of soda ash will not help since it increases the drawing properties. On the positive side, Solophenyl Dark Green GBL is not a cold dyeing product and is not acutely salt sensitive.

Therefore, from the graphs one can deduce that a dyeing procedure for closely woven fabrics with this dyestuff would consist basically of omitting alkali, commencing the dyeing at low temperature with no salt whatsoever, and adding salt in small amounts toward the end of the dyeing operation. As can be seen from Graph III, only relatively small amounts of salt are required for a reasonable exhaust and they can be further decreased in the event of penetration difficulties.

Using this procedure, practical experience has shown that the high fastness properties of Solophenyl Dark Green GBL can be realized on materials which are difficult to penetrate.

Example II - Dyestuff combination containing a salt sensitive, non-migrating component.

The combination of:

Solophenyl Brown RL
Solophenyl Brown GL
Solophenyl Grey 4GL

is very popular for difficult fashion shades and has given very good results in practice particularly for package yarn dyeing. The combination is unusual in

that the shades possess high fastness to light coupled with very good wet fastness for Direct dyestuffs and still yield level dyeings of delicately balanced mode shades of Brown, Tan and Grey.

The graphs for these dyestuffs show they possess quite similar dyeing characteristics so that even under greatly varying dyeing conditions, their combination gives a constant shade.

However, for various reasons such as local supply, cost, or to satisfy special conditions, it is necessary to use combinations of dyestuffs with dissimilar dyeing properties. In such cases, successful results can often be obtained by suitable dyeing procedures.

For example, if it is desired to use Formal Fast Black G Supra I as the grey element in the above combination, replacing Solophenyl Grey 4GL, the higher drawing rate, the salt sensitivity, and the low migration of the Formal Fast Black G Supra I must be taken into consideration. A reasonable procedure would be to commence dyeing with little or no salt, to raise the temperature slowly, and to finally add salt cautiously to complete exhaustion of the two Browns.

Example III- Dyestuff combination containing a low temperature drawing component.

It is well known that dyeing combination shades presents problems when the highest drawing powers of the individual dyestuffs occur at widely different temperatures. The shade varies according to the dyeing temperature and makes matching rather difficult.

Graph II gives full details on the influence of temperature so that an attempt can be made to select the most suitable products, or when it is impossible to do this and still satisfy other considerations such as fastness, knowledge is gained that precise temperature control is required in order to reduce shade variations to a minimum.

A good example of this problem is the use of Diphenyl Fast Yellow RLSW with Solophenyl Red 6BL, Solophenyl Blue 10 GL, and Solophenyl Fast Blue Green BL for producing shades with good light fastness. The optimum drawing power of Diphenyl Fast Yellow RLSW occurs at low temperatures whereas the red, blue and green components only start to apply themselves as the temperature is raised. As a result, the yellow draws rapidly during the initial stages and causes off shade build-up later when high temperatures are reached. Consequently, the final shade varies depending on the temperature at the conclusion of dyeing. This behaviour is particularly disconcerting when the dye bath cools during shade sampling, or when unexhausted Diphenyl Fast Yellow RLSW draws as the dye bath is flooded with cold water after the shade is passed.

In such instances, reference to Graph II for Solophenyl Yellow 2GL discloses dyeing properties similar to the other components which, together with excellent light fastness, suggests its use in place of Diphenyl Fast Yellow RLSW.

Example IV - Considerations involved for securing full shades on cotton with Solophenyl Fast Blue Green BL and Solophenyl Green B.

The interesting shades and high light fastness of these two Direct dyestuffs have made them very useful tools of the dyer. However, if dyeing is carried out with a normal addition of salt for one hour at approximately 195° F., as is customary for Direct dyestuffs, their exhaustion is very incomplete and a high percentage of dyestuff is required for deep shades.

Examination of the graphs shows that surprisingly full shades can be obtained without excessive quantities of dyestuff if the salt is increased to 20 grams per liter (60% on the weight of the goods at a 1:30 ratio), the time is lengthened to 90 minutes, and the temperature is raised to 205° F.

Since both Solophenyl Fast Blue Green BL and Solophenyl Green B draw better on rayon than on cotton, the normal 15% of salt and one hour dyeing time are suitable when dyeing the synthetic fiber.

Example V - Reducing time of dyeing.

By a clear understanding of the dyeing properties of individual dyestuffs, it sometimes is possible to reduce the dyeing time. Apart from the time required for shading, two factors determine the length of a dyeing process, namely,

1 - precautions to ensure good levelling and penetration, most important of which are slow heating of the dye bath and multiple small additions of salt. These steps are necessary to a varying degree depending on the rate of drawing and migrating properties of the particular dyestuffs involved.
2 - slow drawing dyestuffs often require a prolonged dyeing period to attain proper exhaustion, especially in deep shades.

The precautions mentioned in (1) are necessary only when the rate of drawing is high and the migration is moderate or low. However, because of insufficient appreciation of the dyeing characteristics of the dyestuffs used, the bath is often brought to the boil slowly and the salt added in small additions when these precautions are unnecessary, with the result that the dyeing takes considerably more time than is necessary.

In the second case, dyeing time can often be reduced when applying particularly slow drawing dyestuffs, by commencing dyeing at high temperatures with large additions of salt, i. e., without any precautionary measures at all.

Example VI - Selection of dyestuffs for shading.

Shading presents a difficult problem in almost every type of direct dyeing since dye addition is usually made to the bath at high temperatures and in the presence of sufficient salt to exhaust the original charge of dyestuff. The consequent rapid drawing of the toning addition can cause poor results that are familiar to every practical dyer.

Although successful shading additions may be made with most Direct dyestuffs if sufficient care is taken, particularly as to sufficient dilution of the addition

and slowness of introduction into the dye bath, the graphs will be of considerable assistance in selecting the more suitable dyestuffs for shading. Those possessing rapid drawing properties coupled with low migration, should be avoided. The following lists give a few typical examples of suitability for correcting shade under difficult conditions with appreciable quantities of salt in the dye liquor.

Outstandingly Suitable
Solophenyl Blue 2RL
Solophenyl Violet 2RL
Solophenyl Fast Blue Green BL
Solophenyl Green B
Diphenyl Fast Red 5BL Supra I
Solophenyl Red 6BL
Diphenyl Fast Yellow C5GL Conc.
Diphenyl Fast Black L Extra

Less Suitable
Solophenyl Blue 3GL
Formal Fast Black G Supra I
Solophenyl Dark Green GBL
Formal Yellow GR Conc.
Diphenyl Fast Scarlet RS Supra

Example VII - Selection of dyestuffs for padding.

From an ideal point of view, the intention when padding Direct dyestuffs is to uniformly impregnate a fabric with a dyestuff solution. However, some degree of dyeing inevitably occurs during the time of immersion in the pad liquor. Unless dyestuffs of similar dyeing characteristics are used in combination, the cumulative effect of greater substantivity of one or more dyestuff component can cause serious shade matching difficulties during long production runs. Shallow pans of low volume minimize these effects by reducing the time of immersion.

As an example of three dyestuffs comprising a harmonious group well suited for padding, examination of the graphs shows that

Solophenyl Brown RL
Solophenyl Brown GL
Solophenyl Grey 4GL

are eminently suited for combination in padding formulae. The introduction of a low temperature dyeing product such as Diphenyl Fast Yellow C5GL Conc. would be particularly undesirable since it would encourage shade variations with variations in the temperature of the pad liquor.

When padded fabrics are subsequently dyed on jigs or boxes, it is desirable to select dyestuffs possessing good exhaustion at moderate salt concentrations, since otherwise the advantages of padding are lost by excessive bleeding into the dye bath.

General Remarks

As manufacturers of synthetic organic dyestuffs for many years, we would be the last to claim that a study of the graphs can take the place of practical experience. In many ways, dyeing is still an art responding to a sixth sense that printed matter cannot instill.

Admittedly, the graphs have definite limitations with regard to their absolute interpretation. As has been explained in detail, the experimental procedures used are identical for all dyestuffs in order to achieve the primary purpose of comparability. For example, all of the migration tests have been made in dye baths containing 5 g/l of salt. This concentration is high for dyeing some colors, optimum for many and insufficient for others. Therefore, the migration graphs cannot be expected to predict precisely the degree of migration likely to occur in practical dyeing.

Another point that should be kept in mind is that increase in rate of circulation or agitation of the dye liquor or of the goods will increase the rate of drawing.

Thus, in practice, dyestuffs may draw more rapidly than shown in the graphs, which are based on dyeings of yarn under laboratory conditions.

Furthermore, the graphs have little bearing on the concept of level dyeing as affected by irregularities in the quality, cleanliness and the preparation of the material.

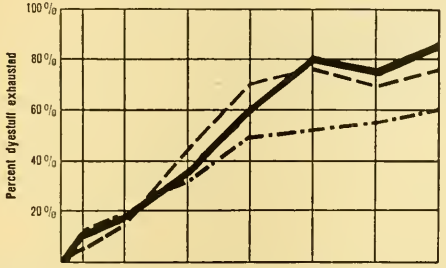
Recognizing these limitations, the presentation herein is a practical compromise that enables beginners to understand some of the complexities of Direct dyestuff application and at the same time provides experienced dyers with valuable information heretofore unavailable in systematic form.

GRAPHS

Solophenyl Yellow 2 GL

(Data based on 1.3 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

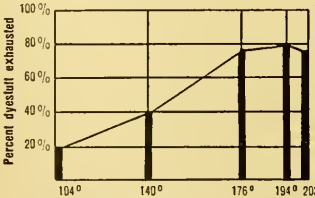
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

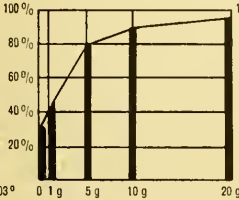


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



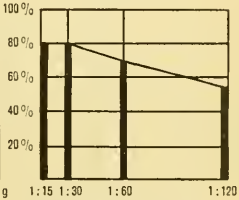
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

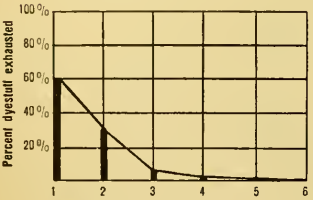
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



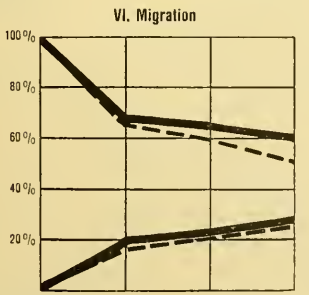
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

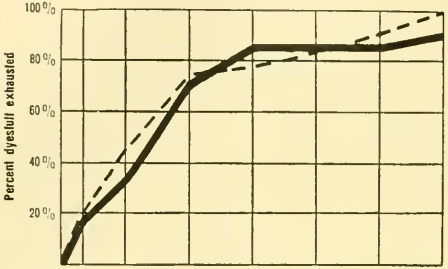
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Solophenyl Yellow FFGL

(Data based on 2 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

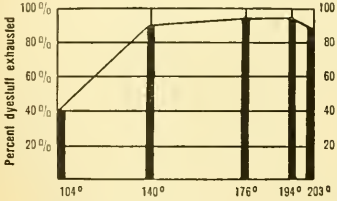
c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) : 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

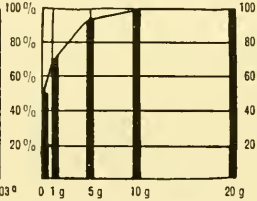
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



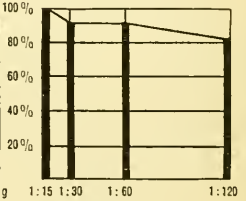
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

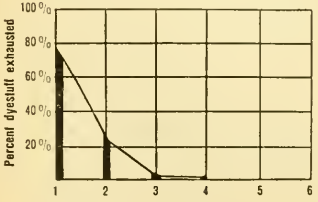
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

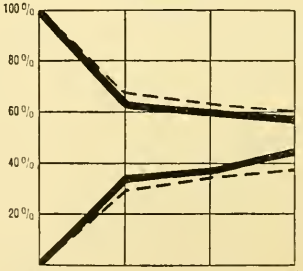
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

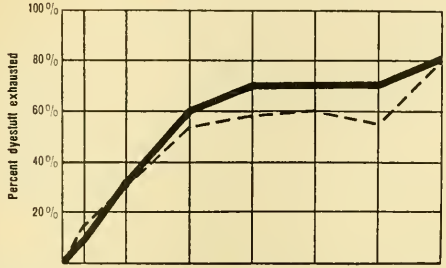


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Brilliant Yellow 8 G

(Data based on 1.2 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) : 5' 15' 30' 45' 60' 75' 90'

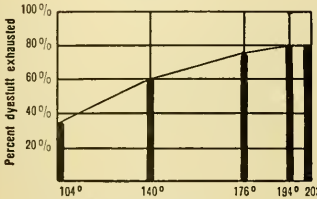
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

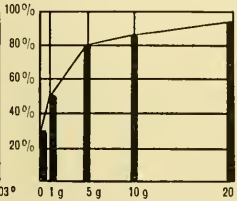


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



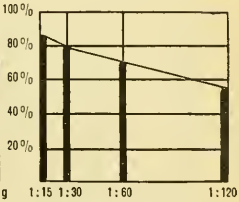
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

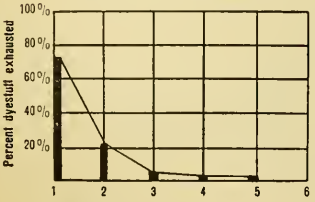
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



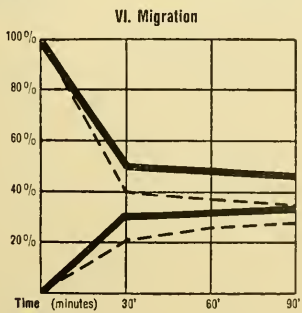
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

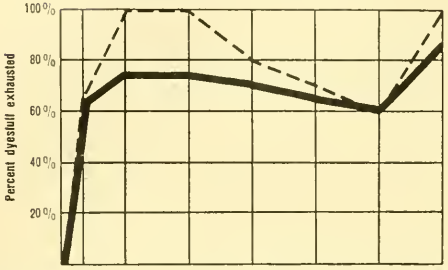
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Yellow C5GL Conc.

[Data based on 0.8 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

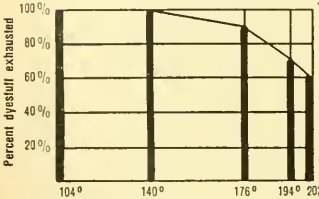
c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes): 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

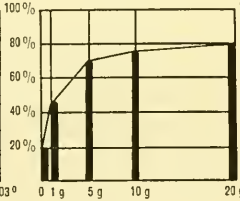
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



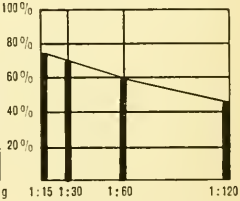
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

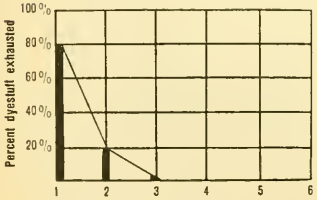
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

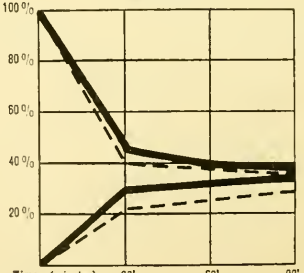
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2–6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

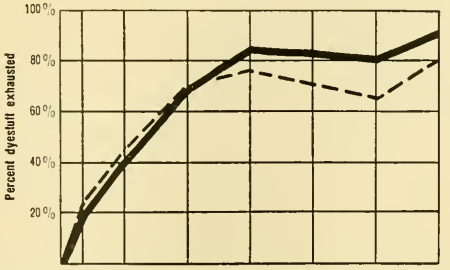
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Yellow GL

(Data based on 0.85 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note: If curve c) is omitted, soda ash has no effect on the drawing

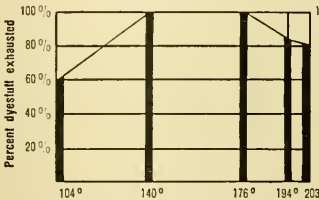
Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

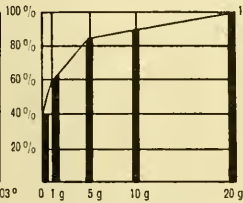


Time: 90 minutes for each dyeing

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

III. Salt



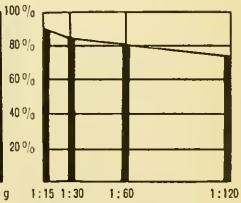
Grams of anhydrous Glauber's Salt per litre

Time: 90 minutes for each dyeing

Temperature: 194° F.

Liquor ratio: 1 : 30

IV. Liquor ratio



Time: 90 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings

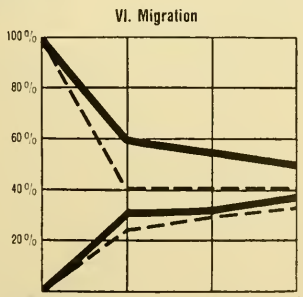
Time: 10 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

VI. Migration



Temperature: 194° F.

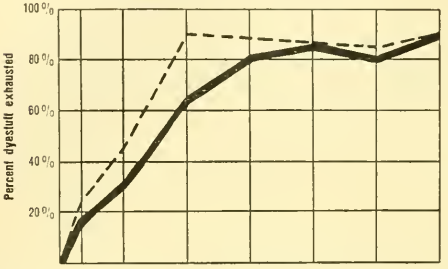
Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

Diphenyl Chlorine Yellow FF Extra

[Data based on 2.25 %]

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

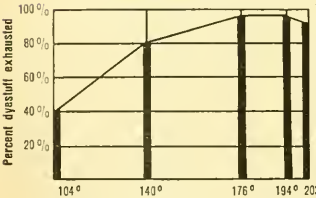
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

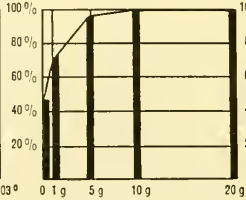
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



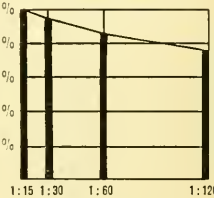
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

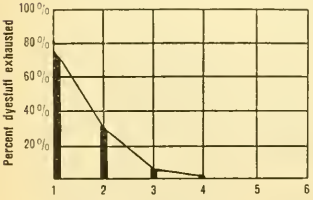
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

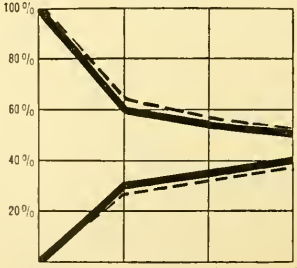
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

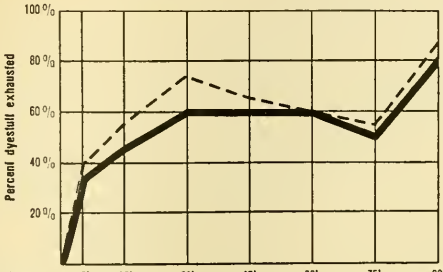
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Yellow RLSW Supra

(Data based on 0,8 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

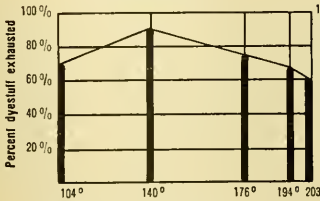
Note: If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

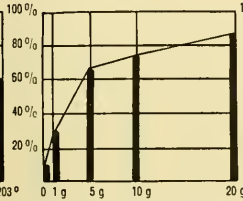
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



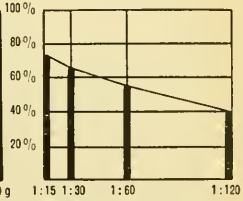
Time: 90 minutes for each dyeing
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time: 90 minutes for each dyeing
Temperature: 194° F.
Liquor ratio: 1 : 30

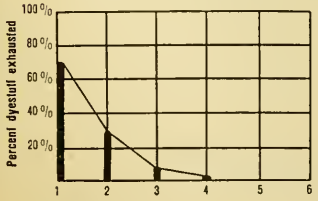
IV. Liquor ratio



Time: 90 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt

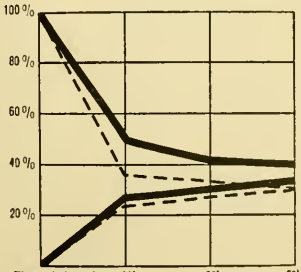
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time: 10 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

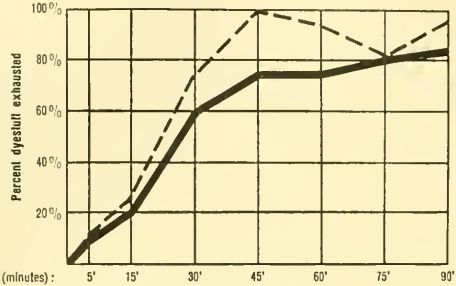
Dyestuff transferred to undyed yarn

Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

Formal Yellow GR Conc.

(Data based on 0.7 %)

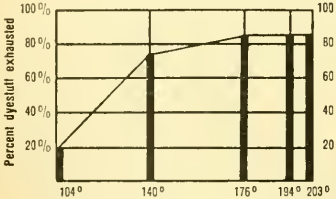
I. Drawing (Combining Time and Temperature)



Time (minutes): 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 156°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

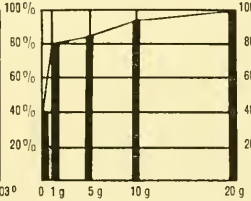
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



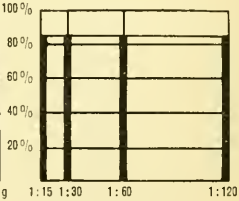
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

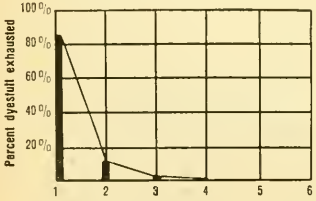
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

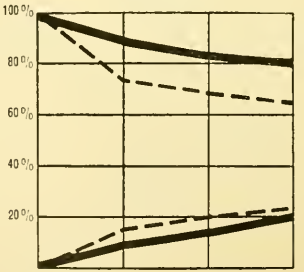
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

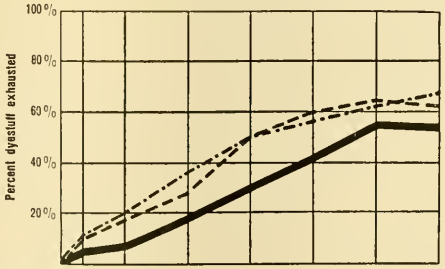


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Cuprophenyl Yellow RL Supra

(Data based on 1 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

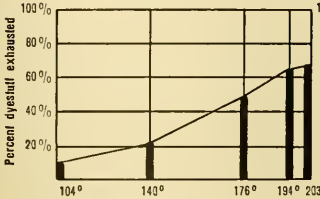
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

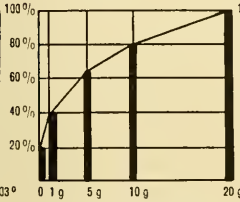
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



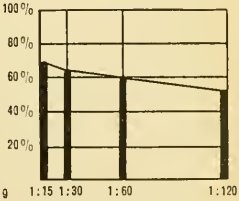
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

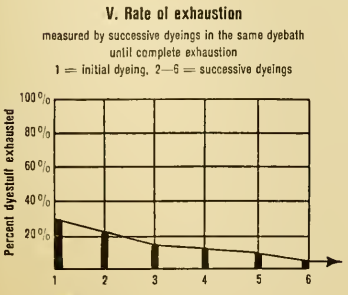
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

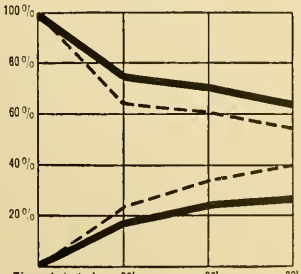
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

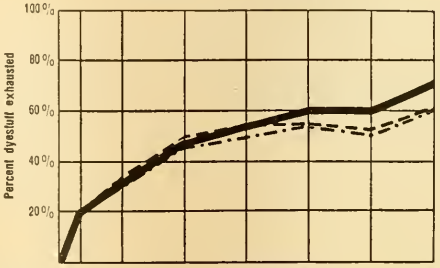
Dyestuff transferred to undyed yarn

Time (minutes)
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Orange TGL

(Data based on 1.1 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

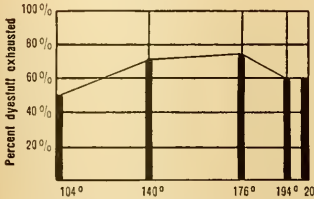
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

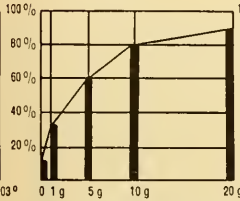


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



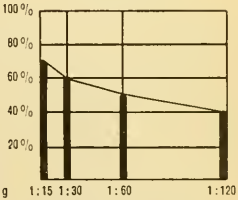
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

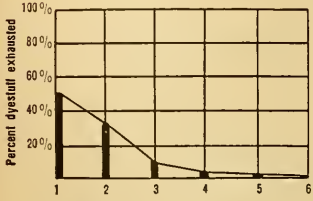
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



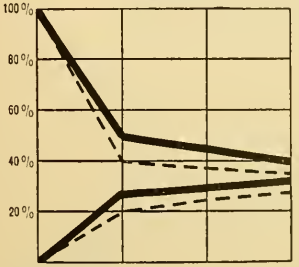
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

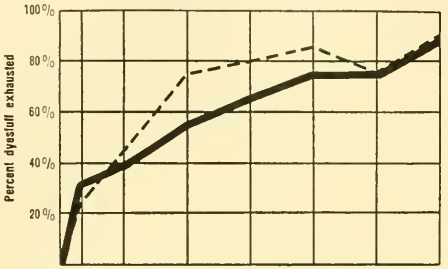
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Orange 4G Conc.

(Data based on 0.7 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) – – – Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

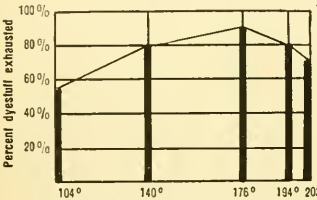
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

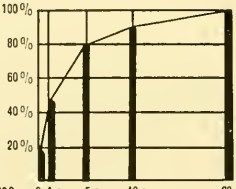
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



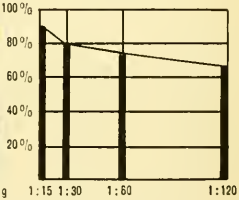
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

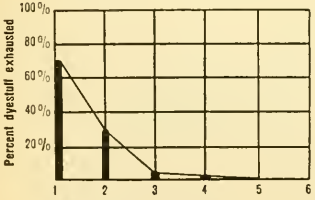
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

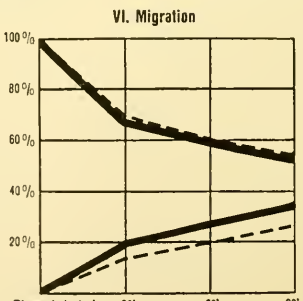
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

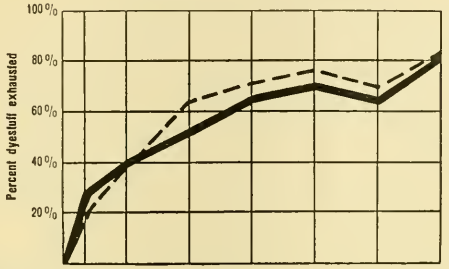
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Orange 2 RL

(Dale based on 1.5 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

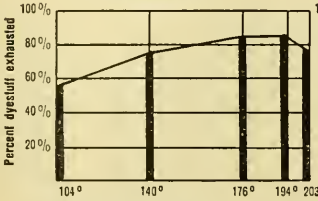
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

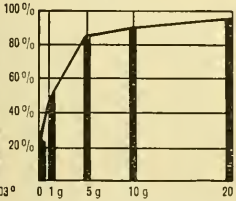
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



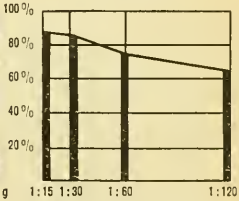
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

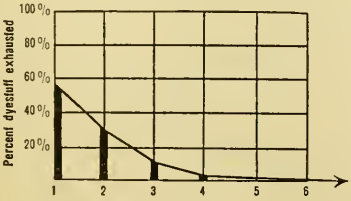
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

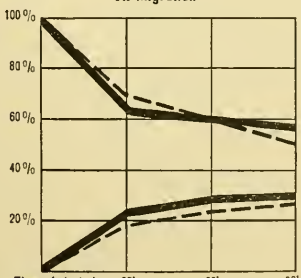
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



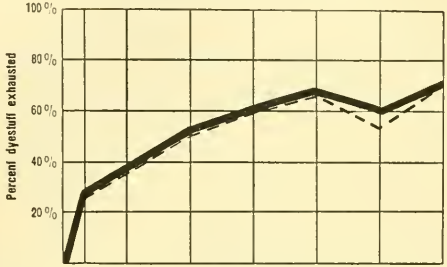
Time (minutes)	30'	60'	90'

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Orange G

(Data based on 1 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

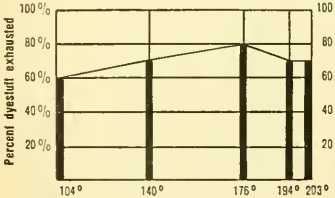
c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes): 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

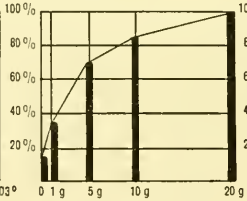
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



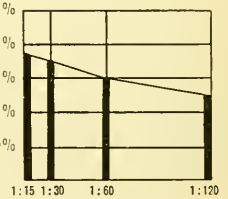
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

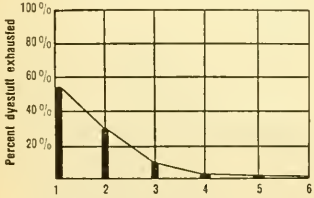
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

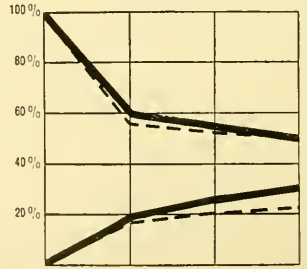
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

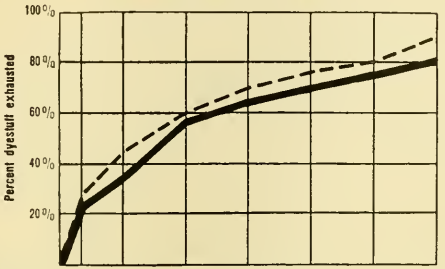


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Orange 3RL

(Data based on 1.2 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

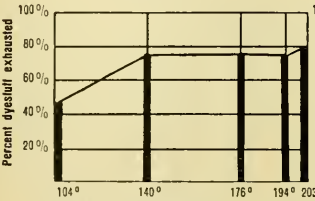
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

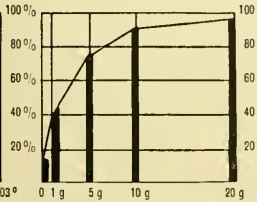
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



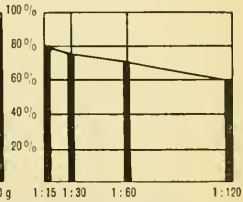
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

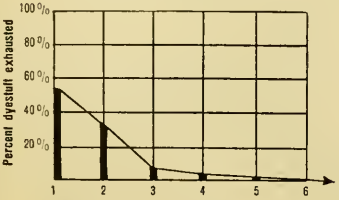
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

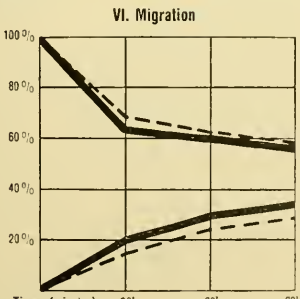
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

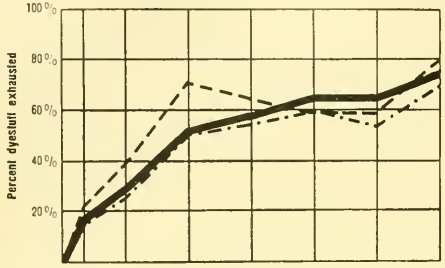
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Orange WS

[Data based on 1.4 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

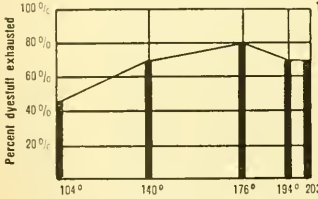
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

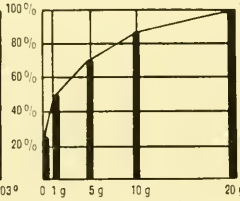
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



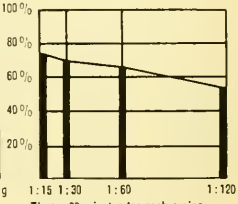
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F
Liquor ratio : 1 : 30

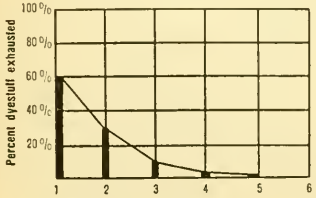
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

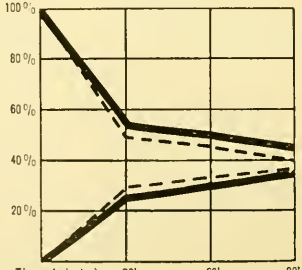
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



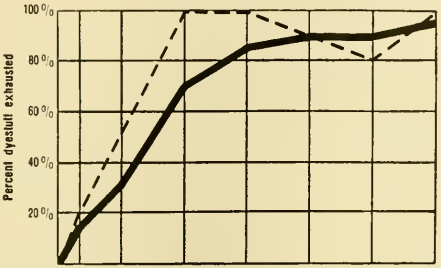
Time (minutes)	30'	60'	90'

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Orange SE Supra

(Data based on 0.8 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

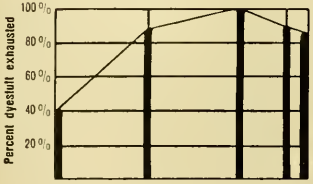
c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) : 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104 ° 140 ° 176 ° 194 ° 194 ° 203 ° Steeped to 158 °
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

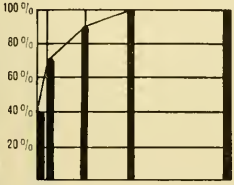
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



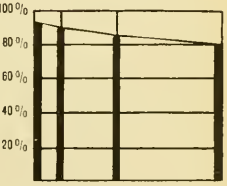
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194 ° F.
Liquor ratio : 1 : 30

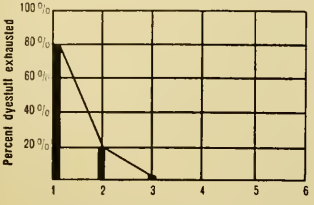
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194 ° F.
Salt : 5 grams per litre of enhydrous Glauber's Salt

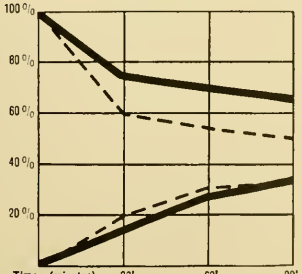
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194 ° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

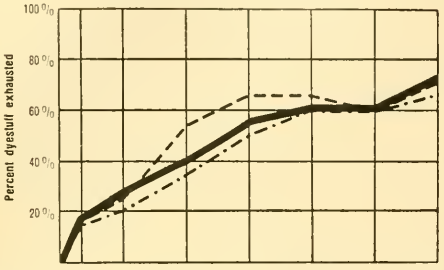
Dyestuff transferred to undyed yarn

Temperature : 194 ° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Orange 3 RS

(Data based on 1.4 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

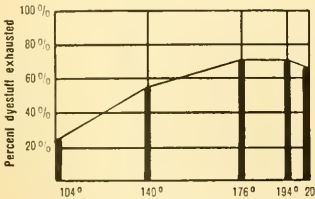
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

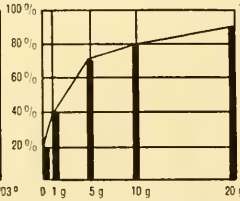


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



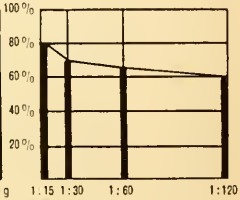
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

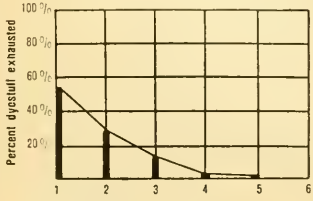
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



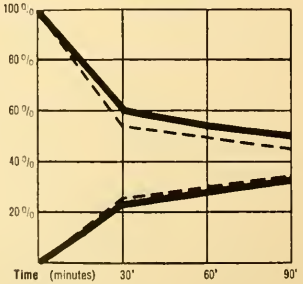
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Time (minutes) 30' 60' 90'

Temperature : 194° F.

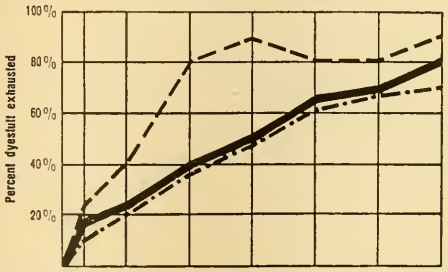
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Solophenyl Red 6BL

(Data based on 1 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

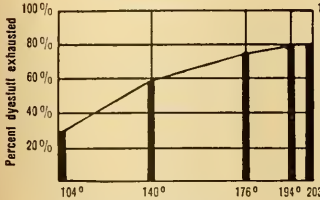
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

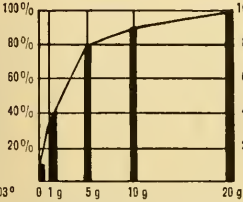
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



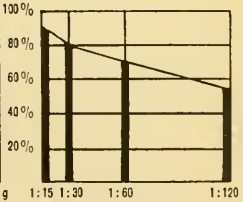
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

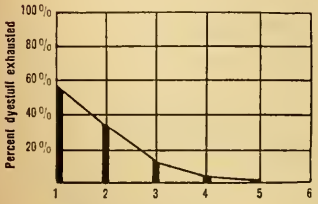
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

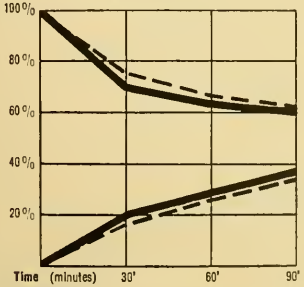
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

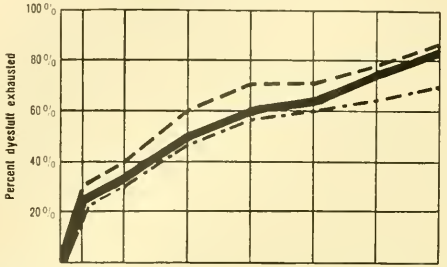
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Bordeaux 2BL

(Data based on 1.5 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

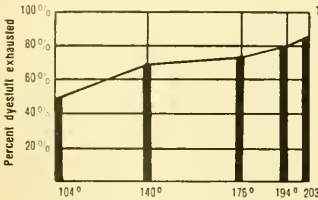
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

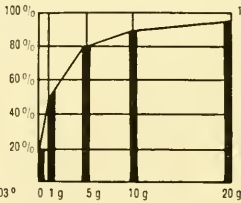
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



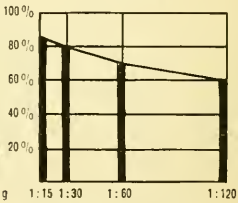
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

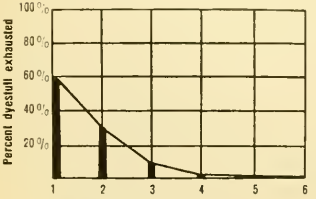
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

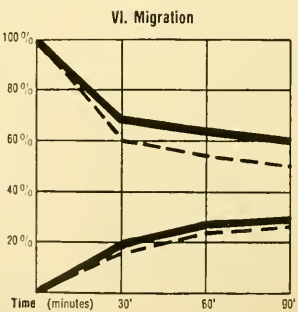
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

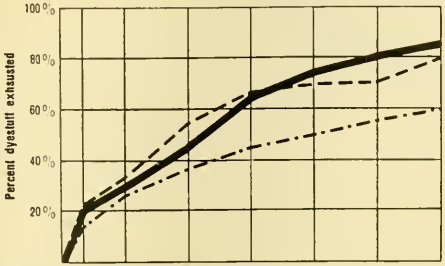


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Rubine BRL

(Data based on 3 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

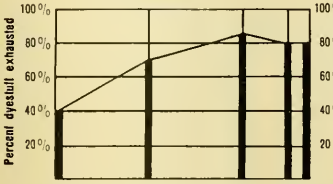
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

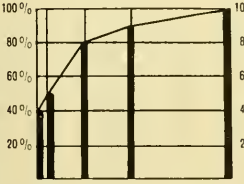


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



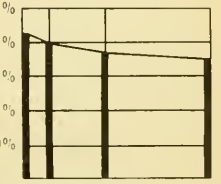
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

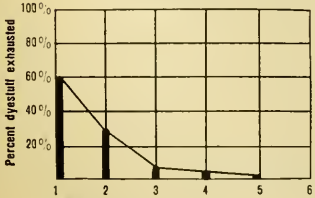
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



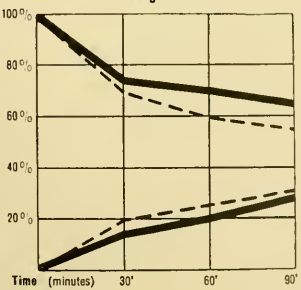
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

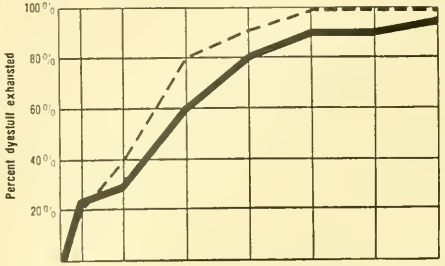
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Scarlet RS Supra

(Data based on 0.55 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note: If curve c) is omitted, soda ash has no effect on the drawing

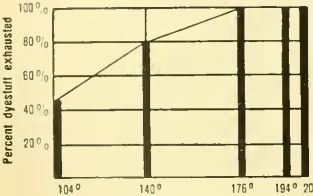
Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

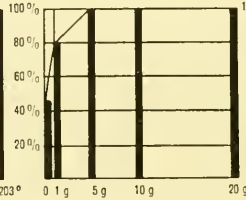


Time: 90 minutes for each dyeing

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

III. Salt



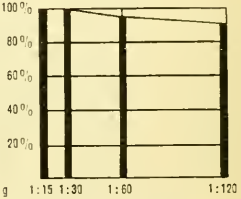
Grams of anhydrous Glauber's Salt per litre

Time: 90 minutes for each dyeing

Temperature: 194° F.

Liquor ratio: 1 : 30

IV. Liquor ratio



Time: 90 minutes for each dyeing

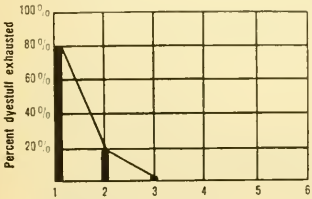
Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2–6 = successive dyeings



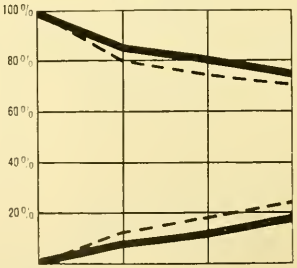
Time: 10 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature: 194° F.

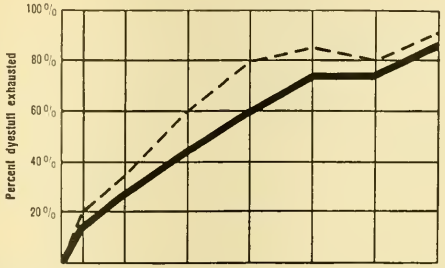
Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

Diphenyl Fast Scarlet 4BAN

(Data based on 1.1 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Soun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

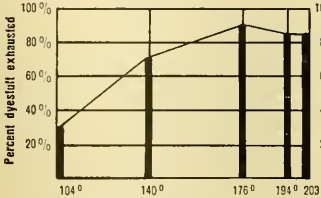
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

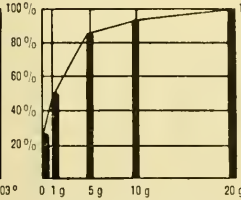


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



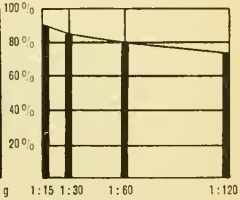
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

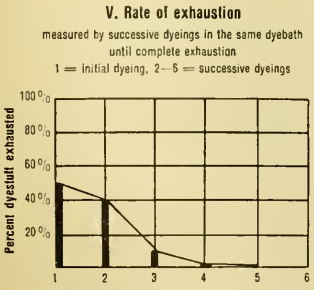
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2–6 = successive dyeings



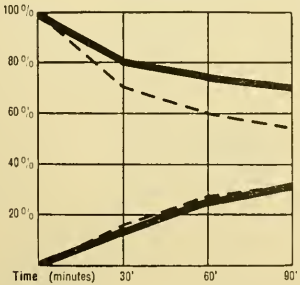
Time : 10 minutes for each dyeing

Temperature : 194° F

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Time (minutes) 30' 60' 90'

Temperature : 194° F.

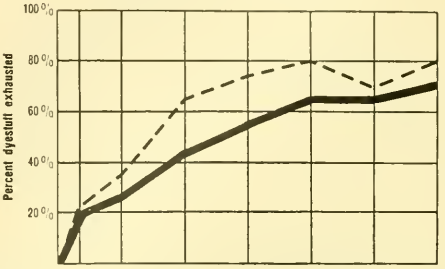
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Scarlet 4BSW

(Data based on 1.4 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

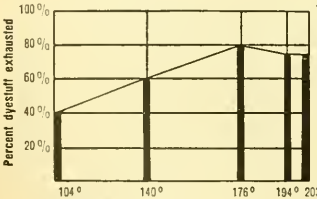
Note: If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

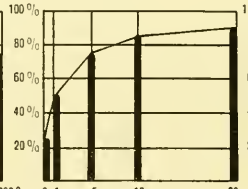
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



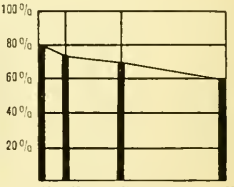
Time: 90 minutes for each dyeing
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature: 194° F.
Liquor ratio : 1 : 30

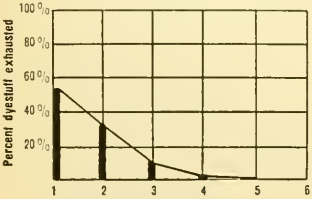
IV. Liquor ratio



Time: 90 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt

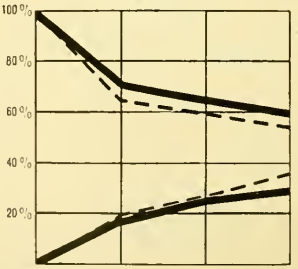
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time: 10 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

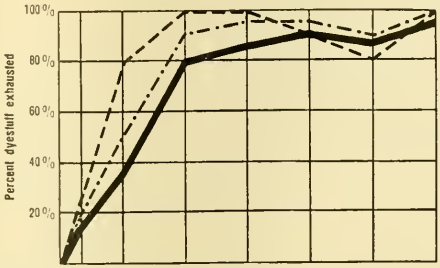


Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Red B Conc.

(Data based on 0.8 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

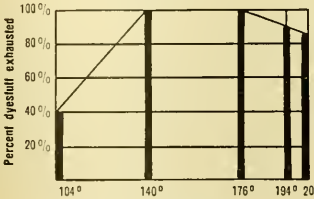
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

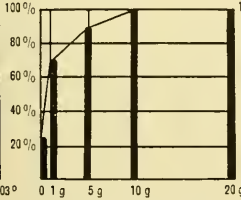
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



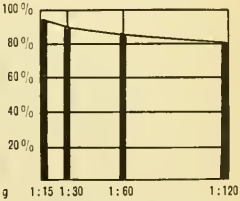
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

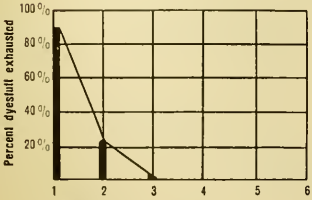
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

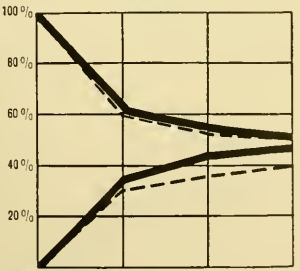
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

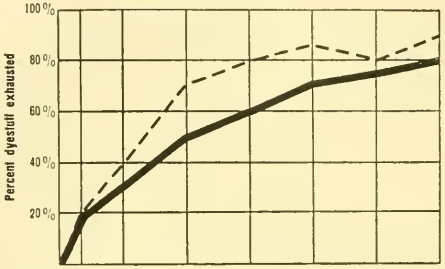
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Scarlet 8B Conc.

(Data based on 1,3 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) – – – Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

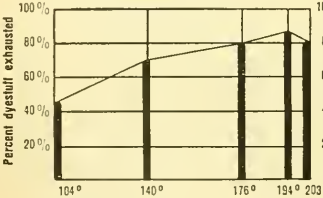
Note: If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

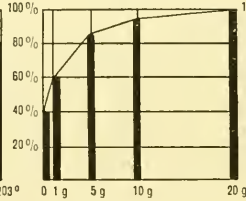
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



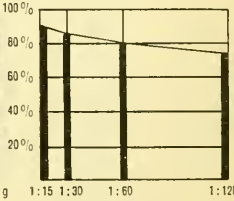
Time: 90 minutes for each dyeing
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time: 90 minutes for each dyeing
Temperature: 194° F.
Liquor ratio: 1 : 30

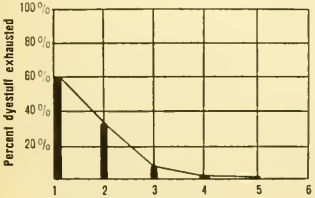
IV. Liquor ratio



Time: 90 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt

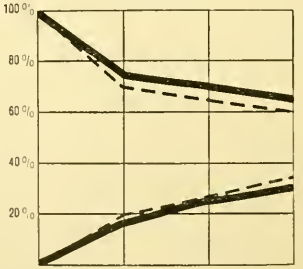
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time: 10 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

VI. Migration



Oyestuff retained by dyed yarn

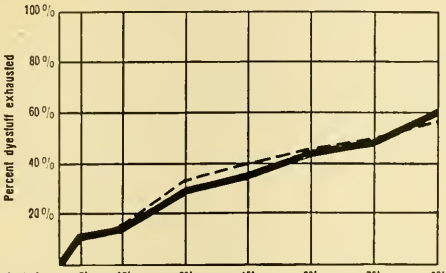
Dyestuff transferred to undyed yarn

Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

Diphenyl Fast Light Red 6BF

[Date based on 1.3 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

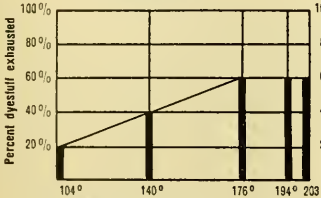
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

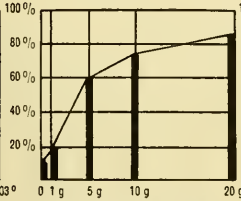


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



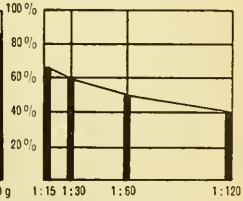
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

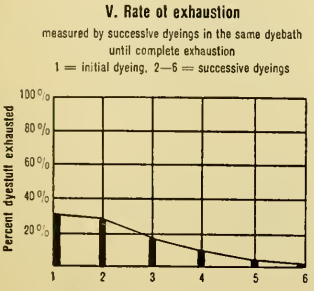
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



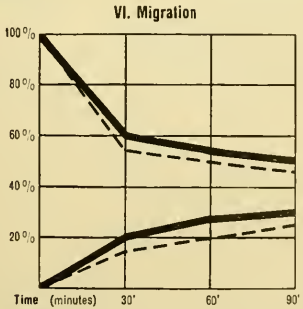
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

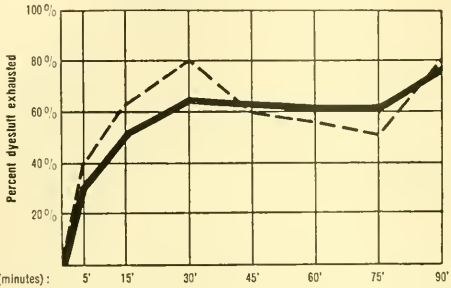
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Red 5BL Supra I

(Data based on 1 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) – – – Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

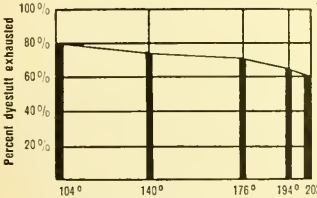
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

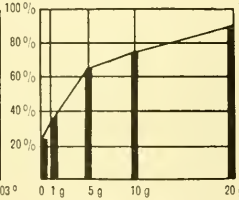


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



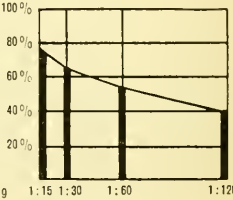
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

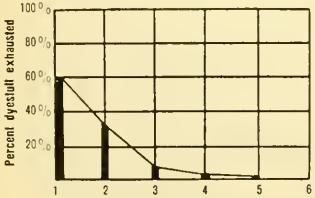
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2–6 = successive dyeings



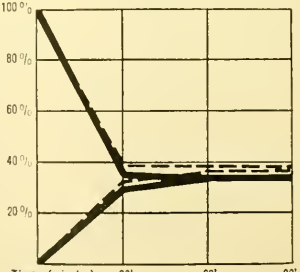
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

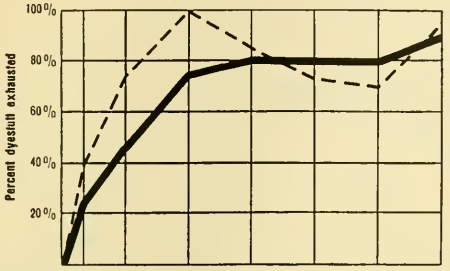
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Bordeaux BC

(Data based on 1 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note: If curve c) is omitted, soda ash has no effect on the drawing

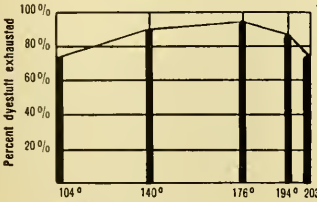
Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

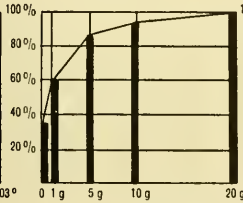


Time: 90 minutes for each dyeing

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

III. Salt



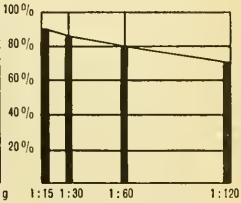
Grams of anhydrous Glauber's Salt per litre

Time: 90 minutes for each dyeing

Temperature: 194° F.

Liquor ratio: 1 : 30

IV. Liquor ratio



Time: 90 minutes for each dyeing

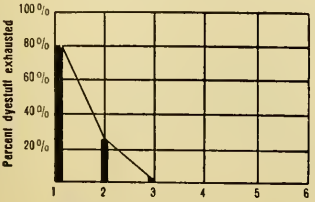
Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = Initial dyeing, 2—6 = successive dyeings



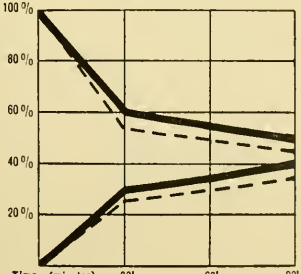
Time: 10 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

VI. Migration



Temperature: 194° F.

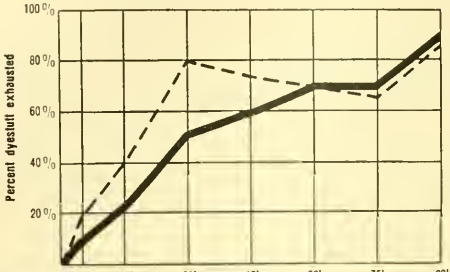
Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

Diphenyl Fast Bordeaux 2BLC

(Data based on 1.4 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

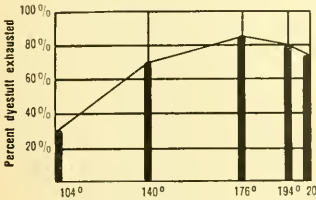
Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

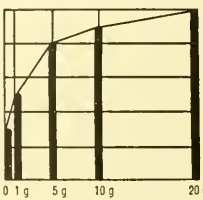


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



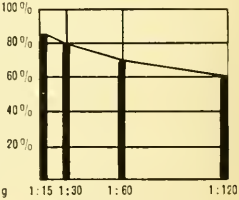
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

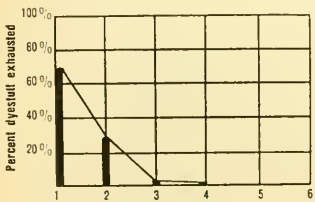
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = Initial dyeing, 2 – 6 = successive dyeings



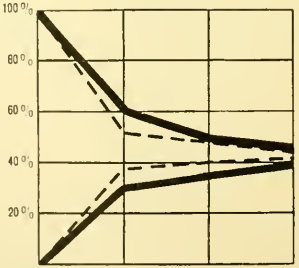
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

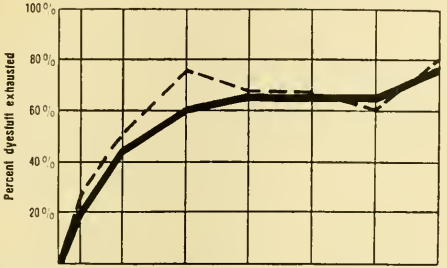
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Blue Red R

(Data based on 1.4 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

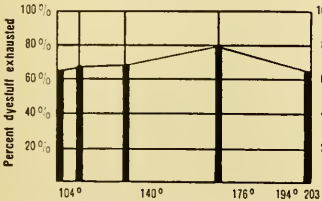
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

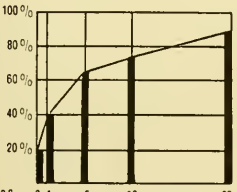


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



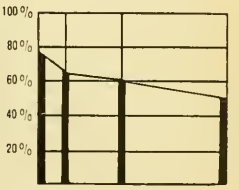
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

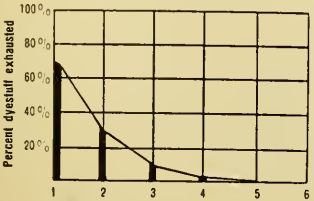
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



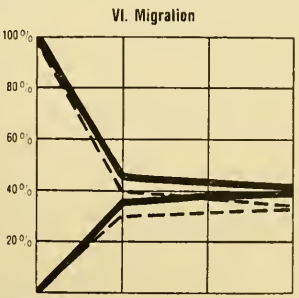
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Time (minutes) 30' 60' 90'

Temperature : 194° F.

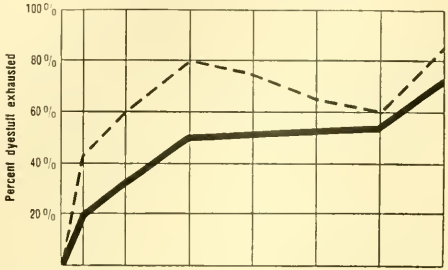
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Blue Red B Extra Conc.

(Data based on 3.6 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

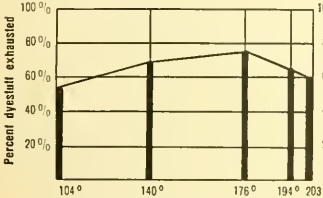
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

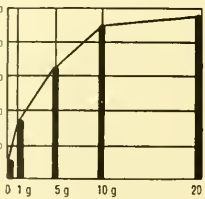


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



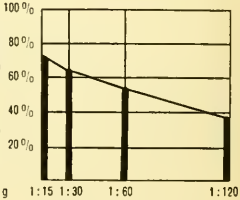
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

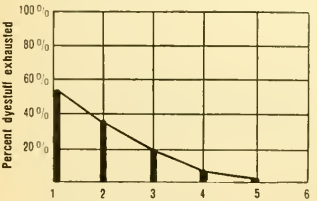
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



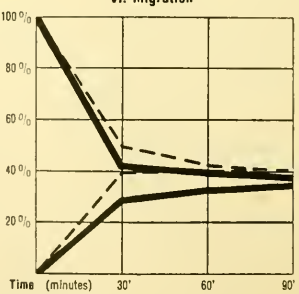
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

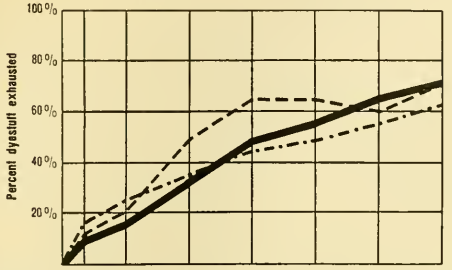
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Cuprophenyl Red BL

[Data based on 3 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

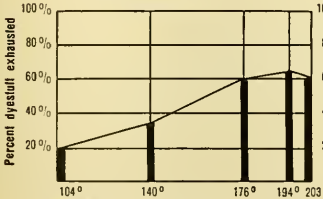
c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) : 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

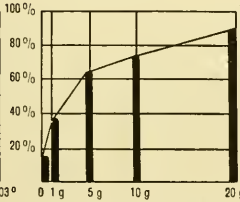
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



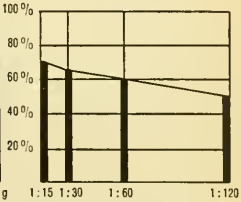
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

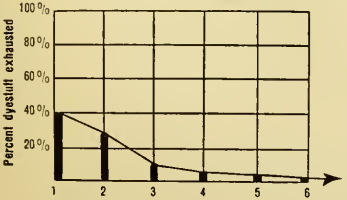
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

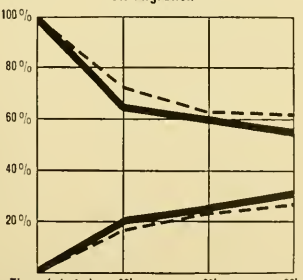
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2–6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

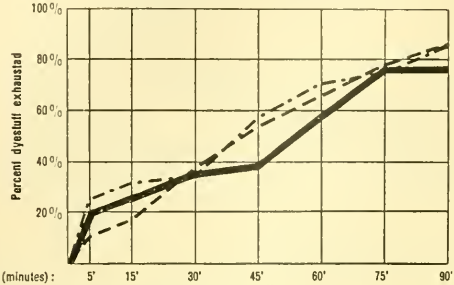
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Cuprophenyl Rubine RL

[Cala based on 4 %]

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

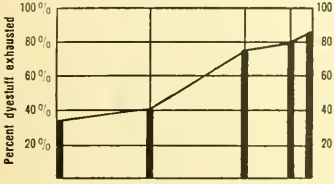
c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) : 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

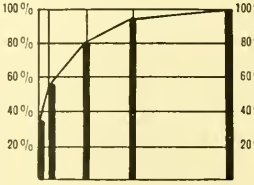
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



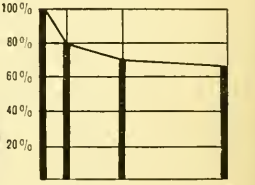
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

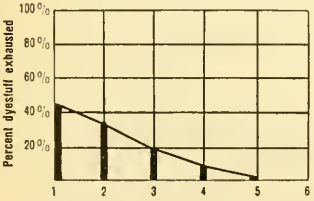
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

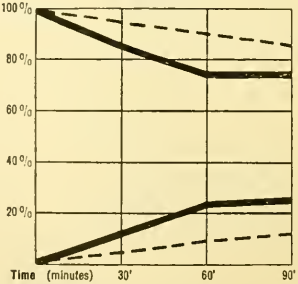
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

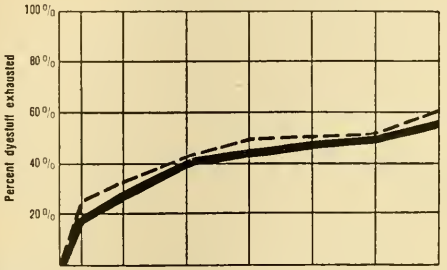


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Violet 2RL

(Data based on 2 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

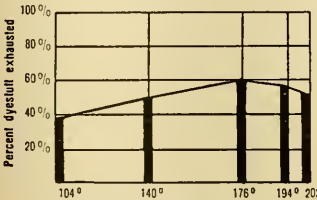
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

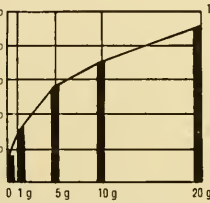
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



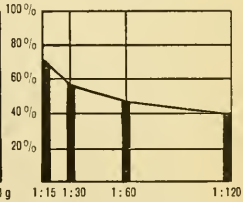
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

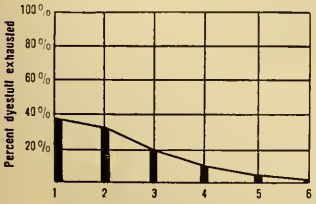
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

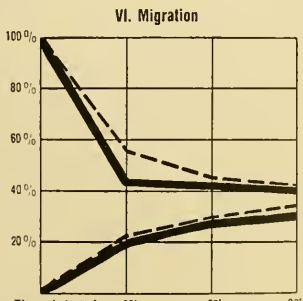
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

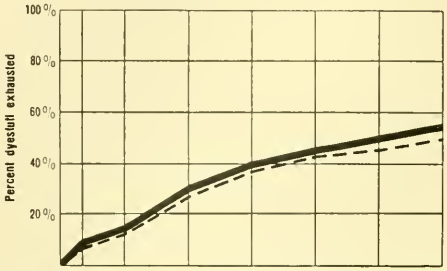
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Violet BRL

[Data based on 3 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

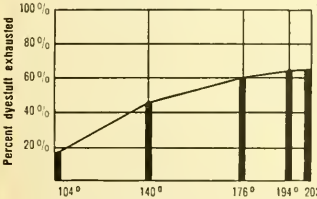
Note: If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

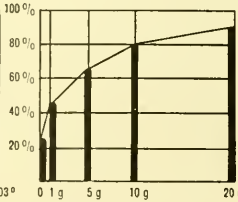
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



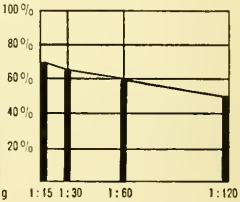
Time: 90 minutes for each dyeing
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time: 90 minutes for each dyeing
Temperature: 194° F.
Liquor ratio: 1 : 30

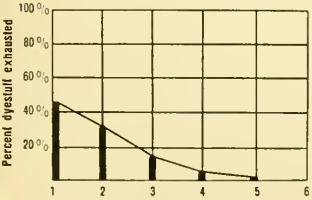
IV. Liquor ratio



Time: 90 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt

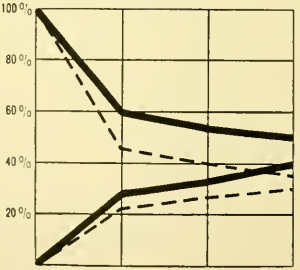
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time: 10 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

VI. Migration

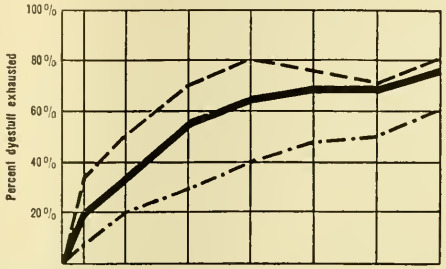


Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

Solophenyl Violet 4BL

(Data based on 1.8 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : It curve c) is omitted, soda ash has no effect on the drawing

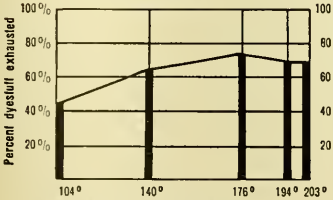
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

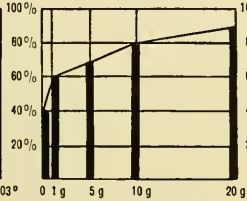


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



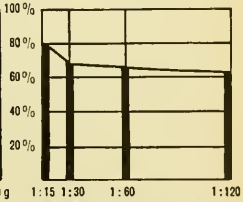
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

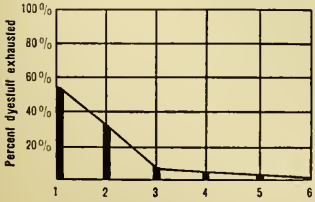
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = Initial dyeing, 2—6 = successive dyeings



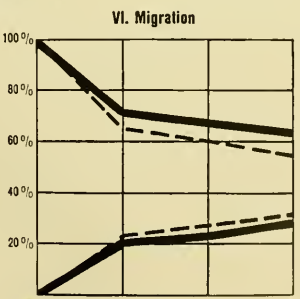
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

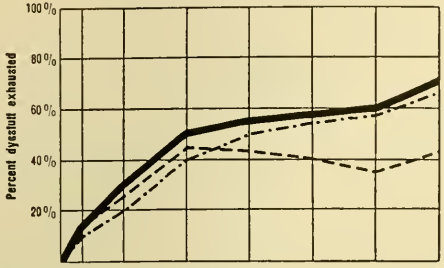
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Solophenyl Brilliant Blue BL

(Data based on 1.8 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

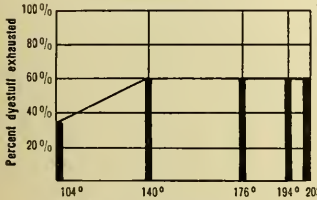
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

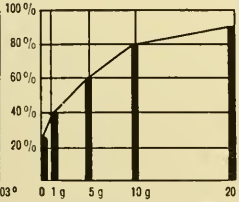


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



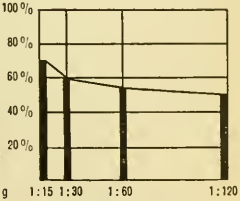
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

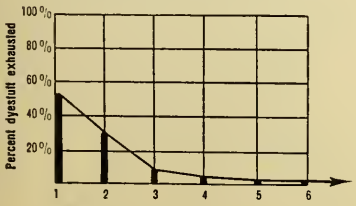
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



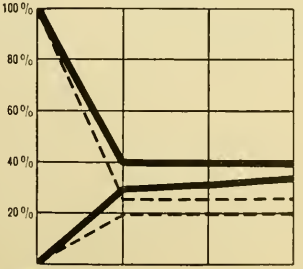
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

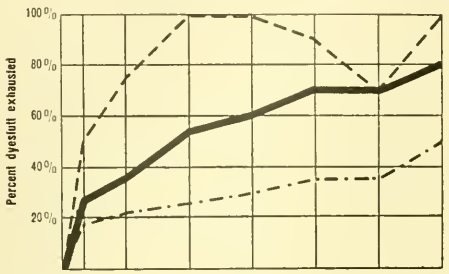
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Solophenyl Blue 2RL

(Data based on 1.2 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

c) —·—·— Same as e) with 0,5 g soda ash per litre of dyebath

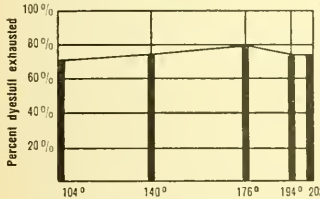
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

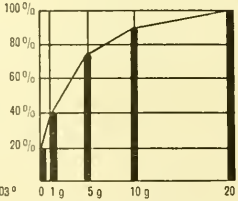
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



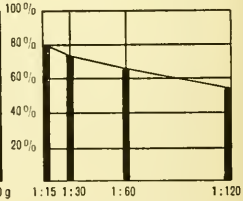
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

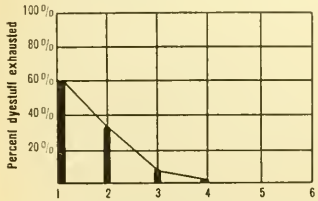
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

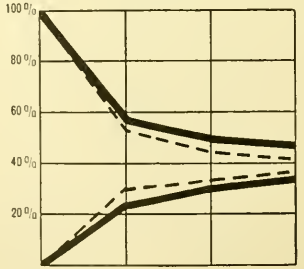
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

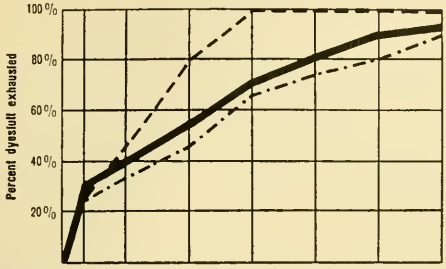
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Blue 3GL

(Data based on 1 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

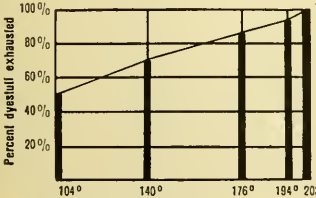
Note: If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

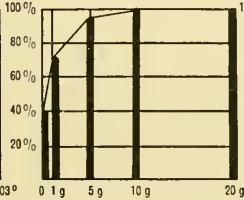
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



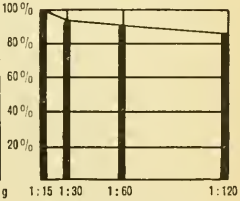
Time: 90 minutes for each dyeing
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time: 90 minutes for each dyeing
Temperature: 194° F.
Liquor ratio: 1 : 30

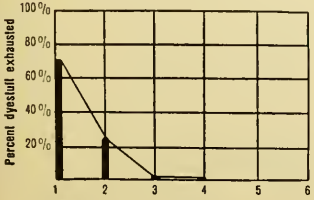
IV. Liquor ratio



Time: 90 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt

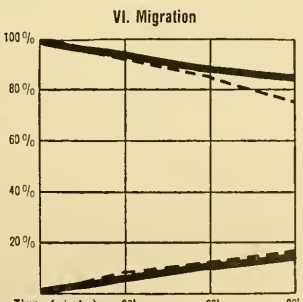
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time: 10 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

VI. Migration

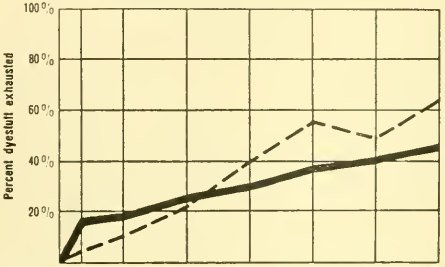


Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

Solophenyl Blue FGL

(Data based on 7 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

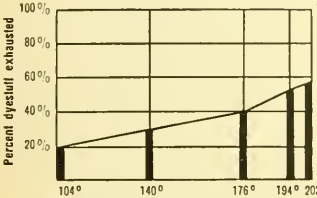
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

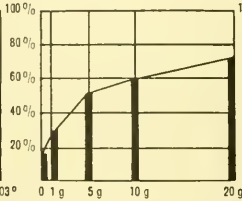
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



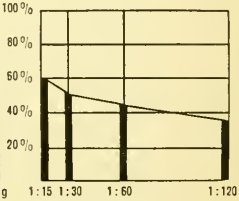
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

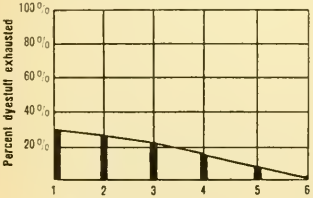
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

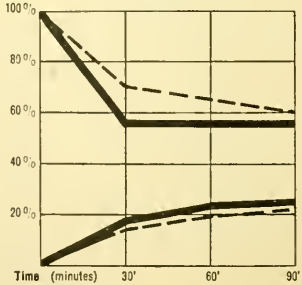
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

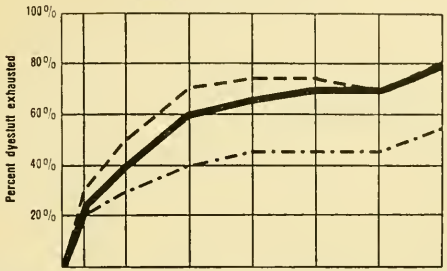


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Blue 6GL

(Data based on 3 %)

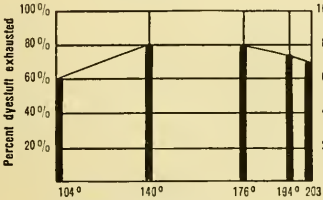
I. Drawing (Combining Time and Temperature)



Time (minutes): 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

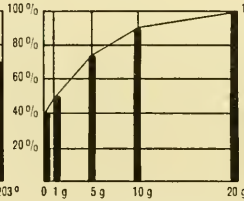
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



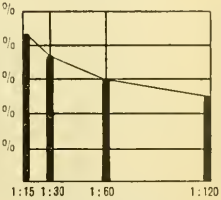
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

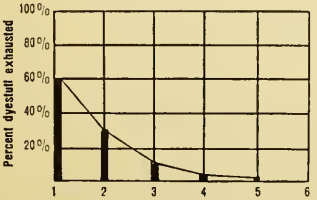
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

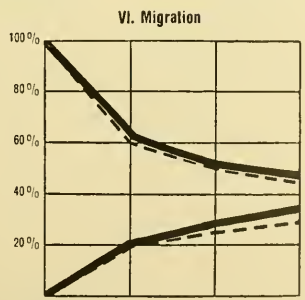
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

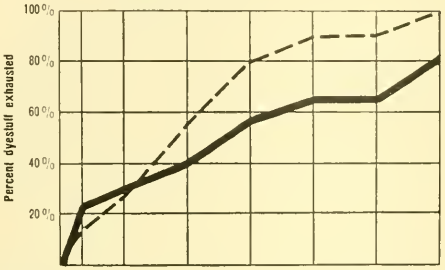


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Blue 10GL

(Data based on 2.25 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same es a) with 0,5 g soda ash per litre of dyebath

Note : It curve c) is omitted, soda ash has no effect on the drawing

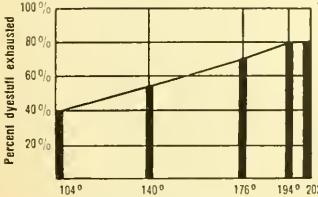
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

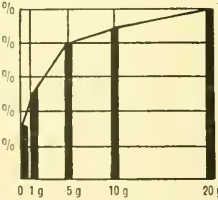


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



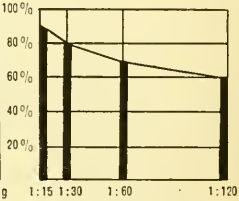
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

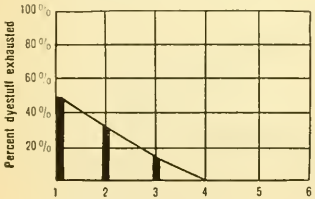
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2 – 6 = successive dyeings



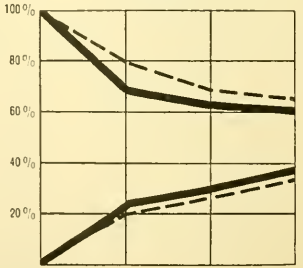
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Oyestuff retained by dyed yarn

Oyestuff transferred to undyed yarn

Time (minutes)	30'	60'	90'

Temperature : 194° F.

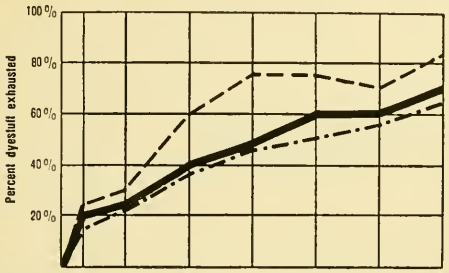
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Blue GLN Conc.

(Data based on 1.5 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

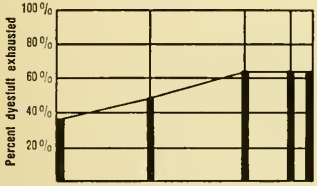
c) Same as a) with 0,5 g soda ash per litre of dyebath

Note: If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes): 5' 15' 30' 45' 60' 75' 90'
Temperature: (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

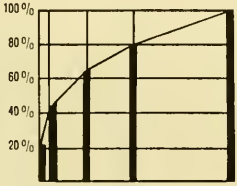
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



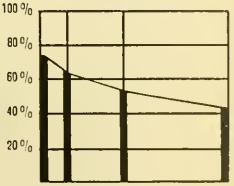
Time: 90 minutes for each dyeing
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time: 90 minutes for each dyeing
Temperature: 194° F.
Liquor ratio: 1 : 30

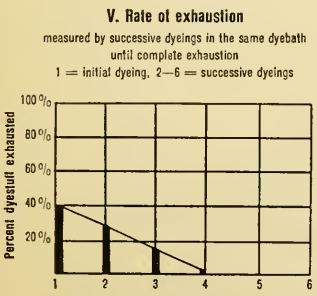
IV. Liquor ratio



Time: 90 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt

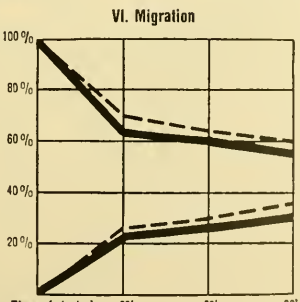
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time: 10 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

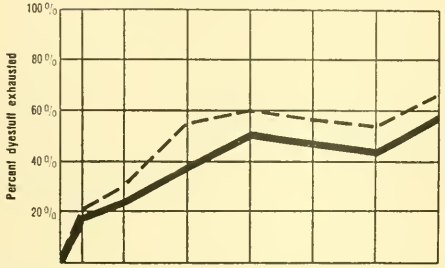
Dyestuff transferred to undyed yarn

Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

Diphenyl Fast Blue 2GLN Conc.

(Data based on 1.25 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note: If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes): 5' 15' 30' 45' 60' 75' 90'

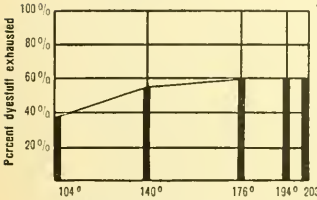
Temperature: (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

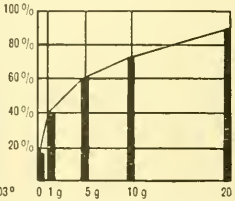


Time: 90 minutes for each dyeing

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

III. Salt



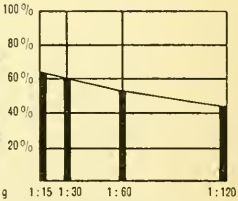
Grams of anhydrous Glauber's Salt per litre

Time: 90 minutes for each dyeing

Temperature: 194° F.

Liquor ratio: 1 : 30

IV. Liquor ratio



Time: 90 minutes for each dyeing

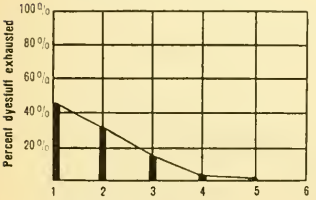
Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



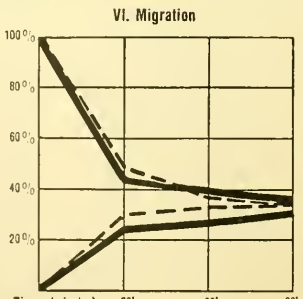
Time: 10 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature: 194° F.

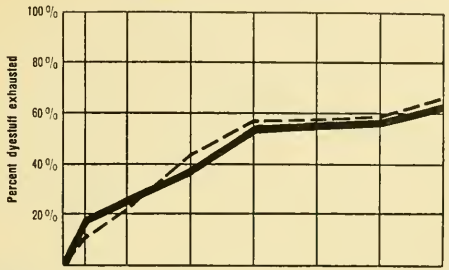
Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

Diphenyl Fast Blue 4GL Supra

(Data based on 1.9 %)

I. Drawing (Combining Time and Temperature)

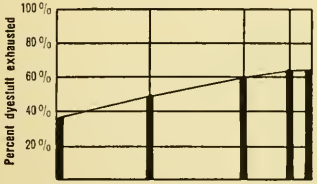


Note : if curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) : 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

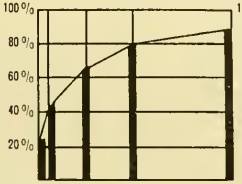
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



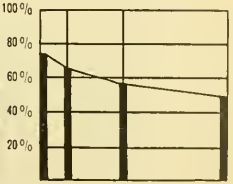
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

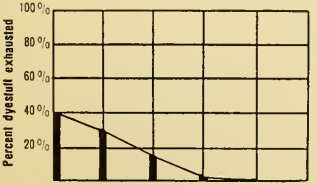
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

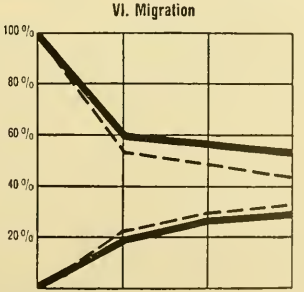
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

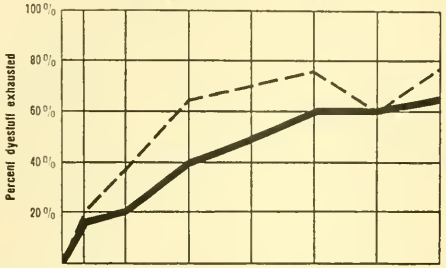


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Blue 3RL Conc.

(Data based on 0.65 %)

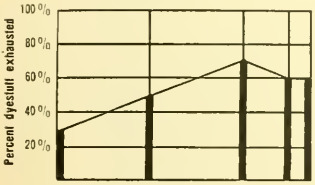
I. Drawing (Combining Time and Temperature)



Time (minutes): 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

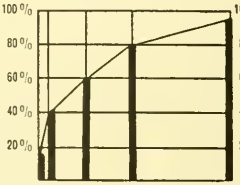
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



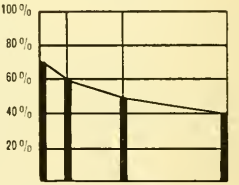
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

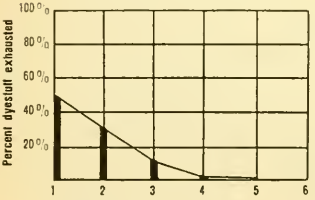
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

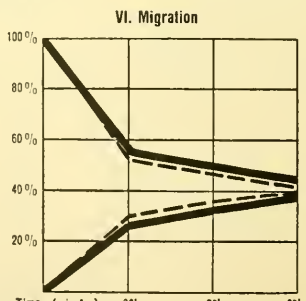
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2–6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

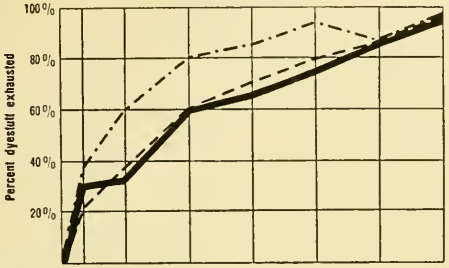


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Cuprophenyl Brilliant Blue 2BL

(Data based on 2.5 %)

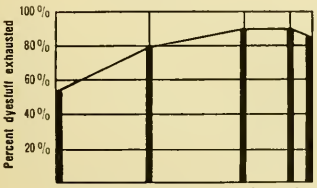
I. Drawing (Combining Time and Temperature)



Time (minutes) : 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

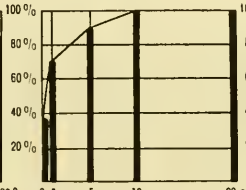
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



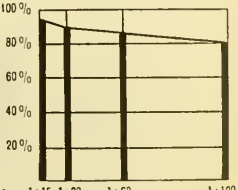
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

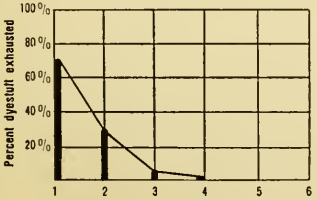
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of enhydrous Glauber's Salt

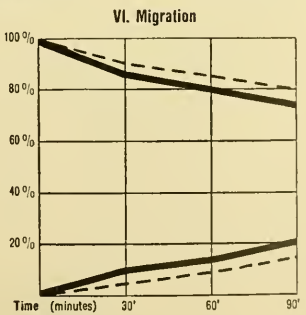
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

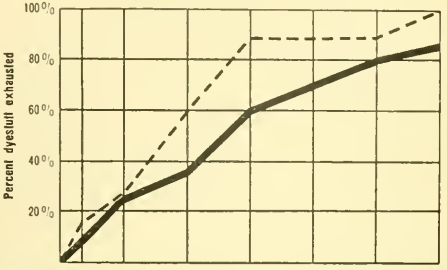


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Cuprophenyl Navy Blue BL 200 %

(Data based on 2 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note: If curve c) is omitted, soda ash has no effect on the drawing

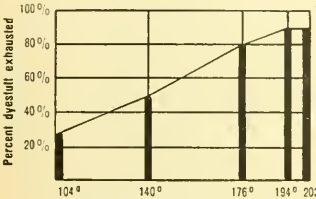
Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

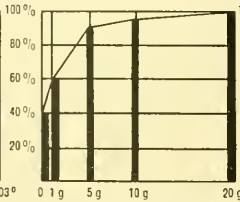


Time: 90 minutes for each dyeing

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

III. Salt



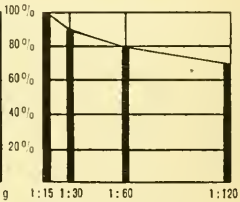
Grams of anhydrous Glauber's Salt per litre

Time: 90 minutes for each dyeing

Temperature: 194° F.

Liquor ratio: 1 : 30

IV. Liquor ratio



Time: 90 minutes for each dyeing

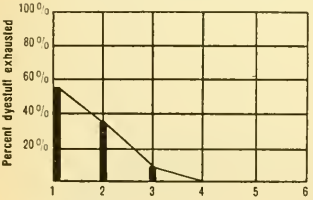
Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



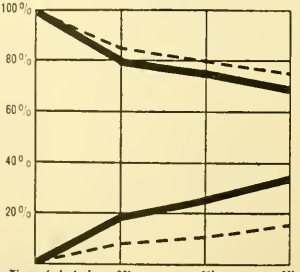
Time: 10 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Time (minutes)	30'	60'	90'

Temperature: 194° F.

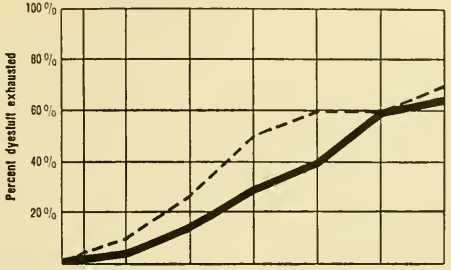
Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

Cuprophenyl Navy Blue RL 200%

(Data based on 2.5 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

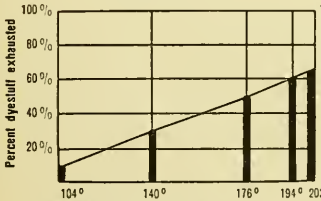
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

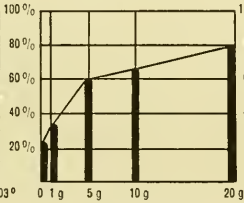


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



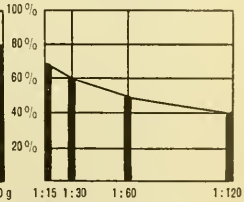
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

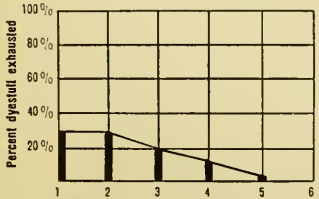
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



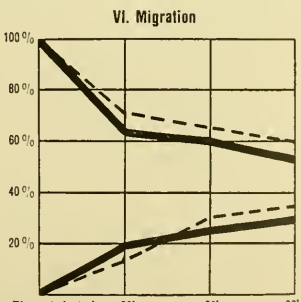
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

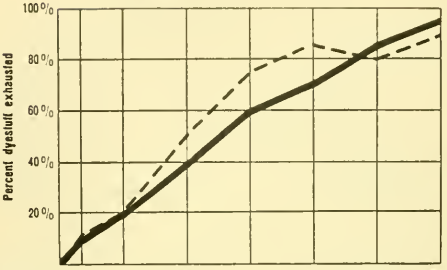
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Cuprophenyl Navy Blue BRL

[Data based on 5 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

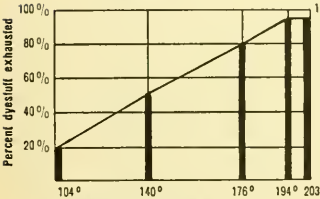
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

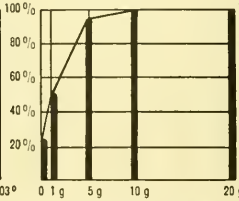
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



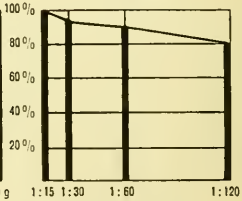
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

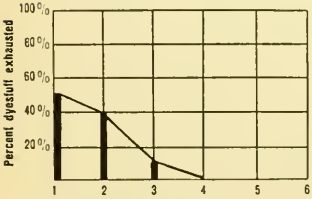
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of enhydrous Glauber's Salt

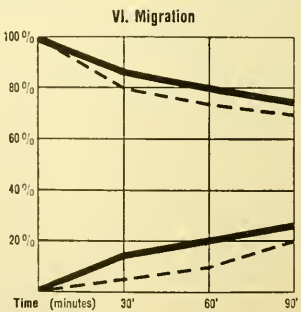
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

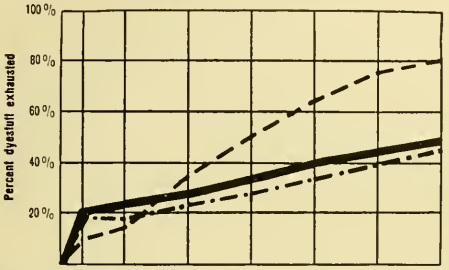
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Fast Blue Green BL

(Data based on 1.8 %)

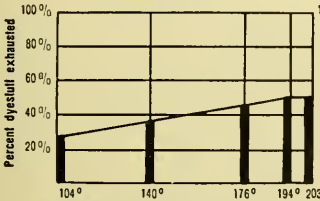
I. Drawing (Combining Time and Temperature)



Time (minutes): 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

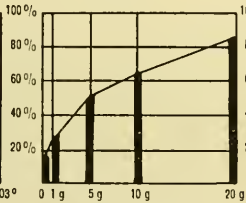
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



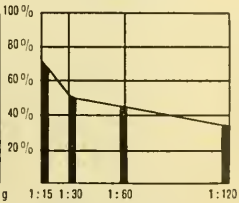
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

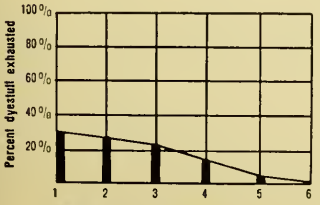
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

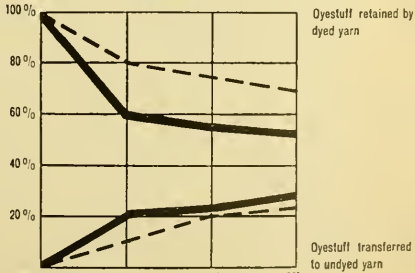
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

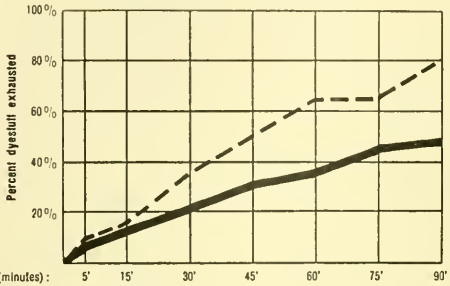


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Green B

(Data based on 1.5 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) – – – Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

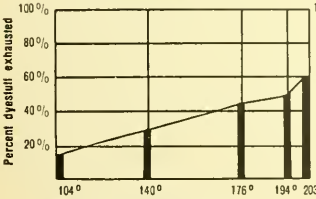
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

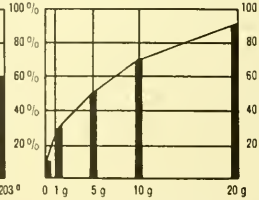
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



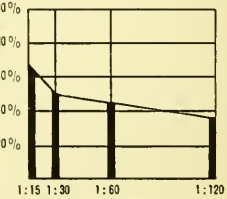
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

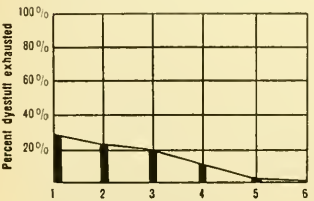
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

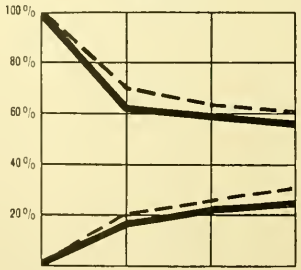
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2–6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

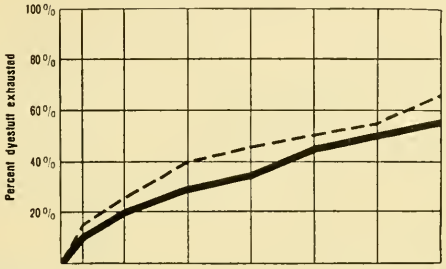


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Green GL

(Data based on 2.2 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

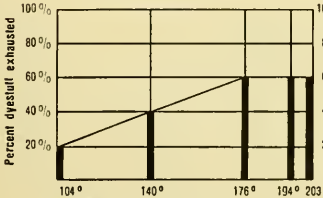
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104 °	140 °	176 °	194 °	194 °	203 °	Steeped to 158 °

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

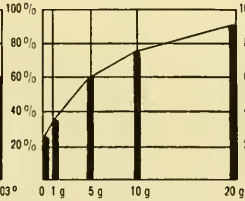


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



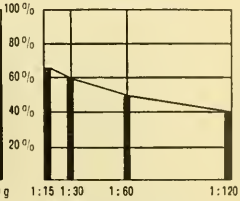
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

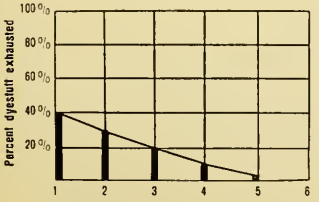
Temperature : 194 ° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



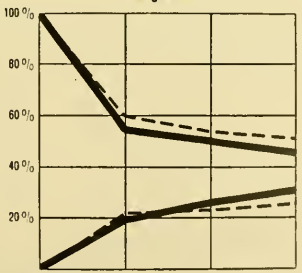
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

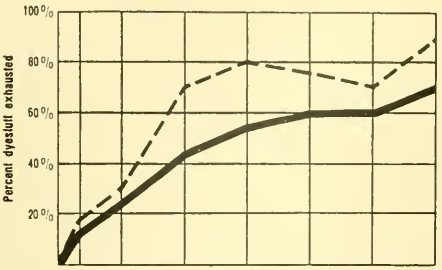
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Solophenyl Brilliant Green 5GL

[Data based on 2.5 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

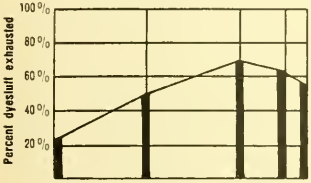
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

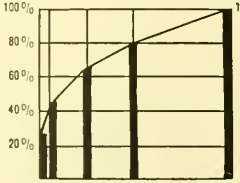


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



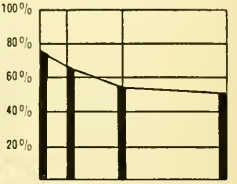
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 . 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

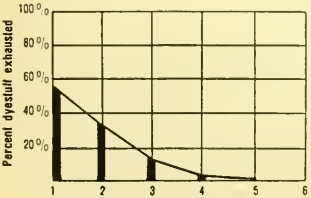
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = Initial dyeing, 2—6 = successive dyeings



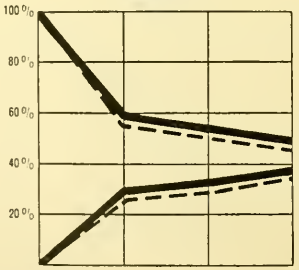
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

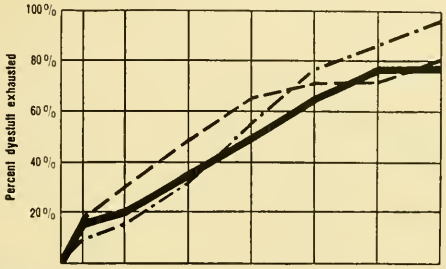
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Solophenyl Dark Green GBL

(Data based on 2.5 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

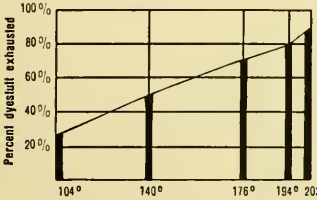
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

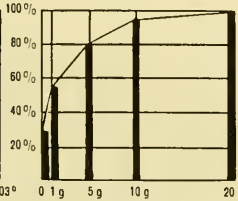
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



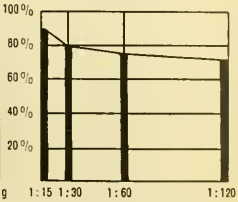
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

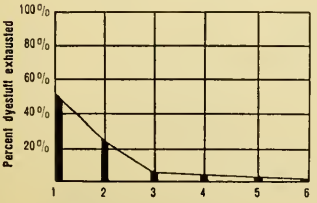
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

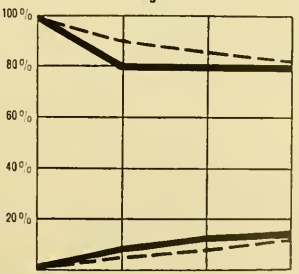
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

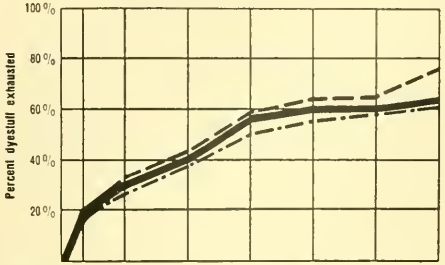


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Olive GL Extra

(Data based on 1.5 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

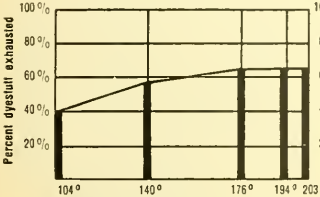
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

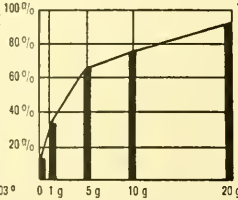


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



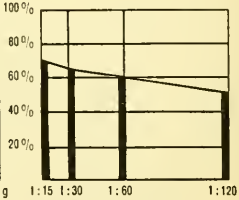
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

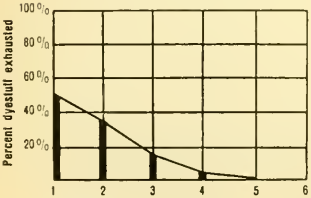
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



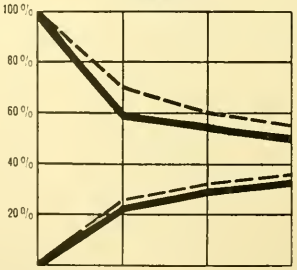
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

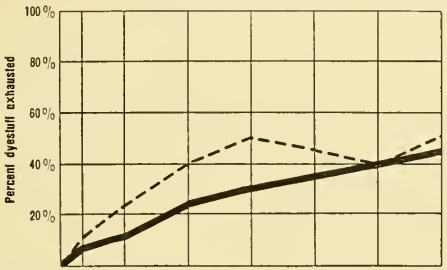
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Brilliant Green G

[Data based on 3.3 %]

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

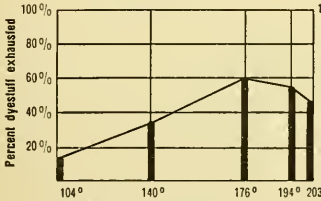
c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) : 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

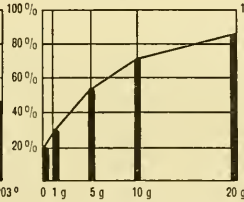
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



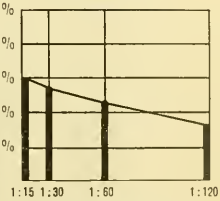
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

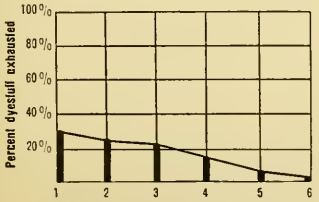
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

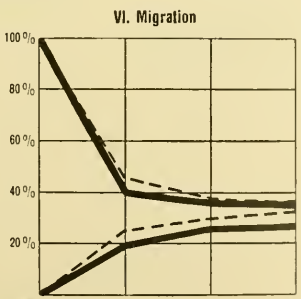
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Oyestuff retained by dyed yarn

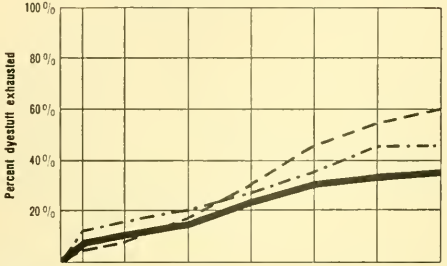
Oyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Brilliant Green 5GW 200%

(Data based on 2 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

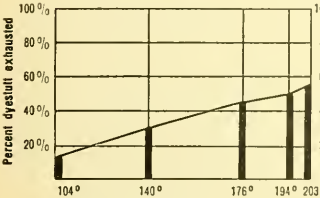
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

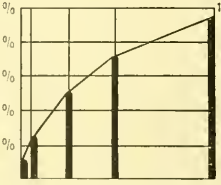
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



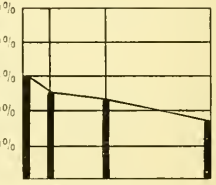
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

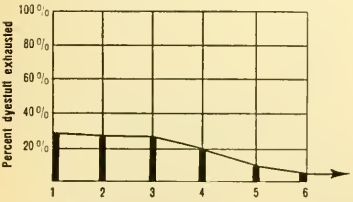
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

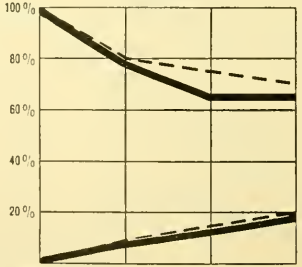
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

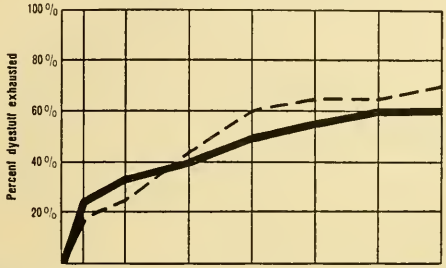


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Brown GL

(Oala based on 1.4 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

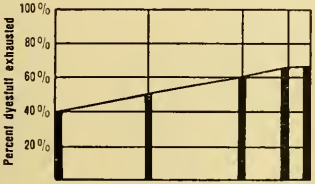
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104 °	140 °	176 °	194 °	194 °	203 °	Steeped to 158 °

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

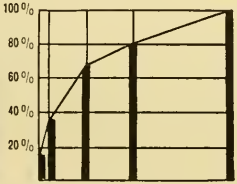


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



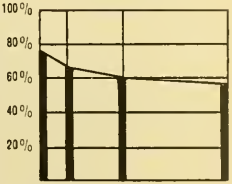
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194 ° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

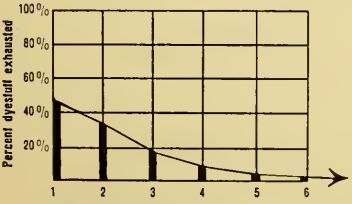
Temperature : 194 ° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = Initial dyeing, 2—6 = successive dyeings



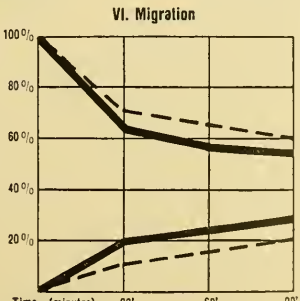
Time : 10 minutes for each dyeing

Temperature : 194 ° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194 ° F.

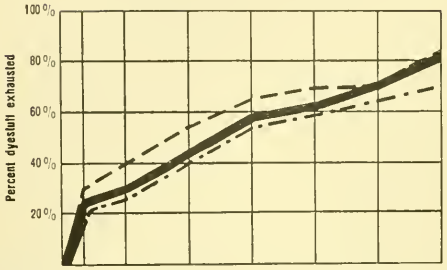
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Solophenyl Brown RL

[Data based on 1.6 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

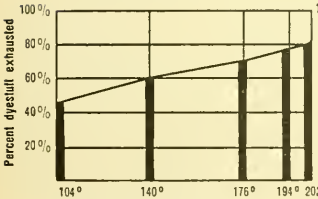
Note: If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

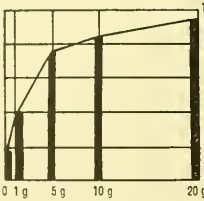
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



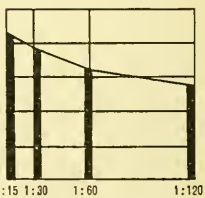
Time: 90 minutes for each dyeing
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time: 90 minutes for each dyeing
Temperature: 194° F.
Liquor ratio: 1 : 30

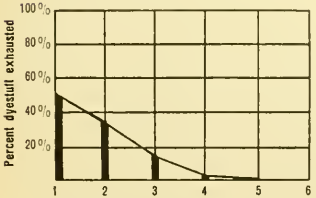
IV. Liquor ratio



Time: 90 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt

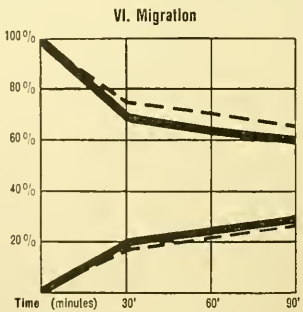
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time: 10 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

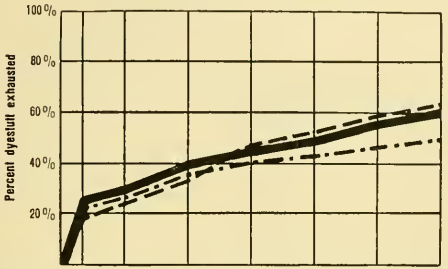
Dyestuff transferred to undyed yarn

Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

Solophenyl Brown BL

[Data based on 1.4 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

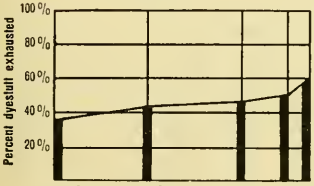
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

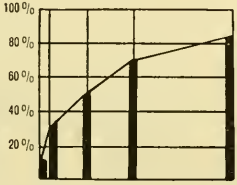


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



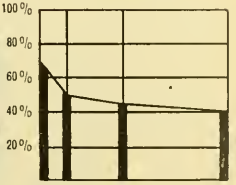
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

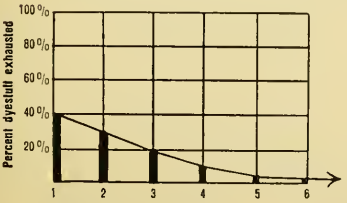
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



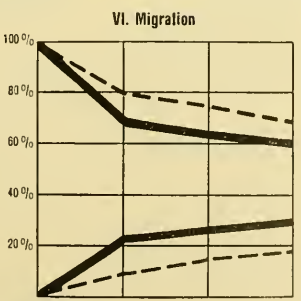
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

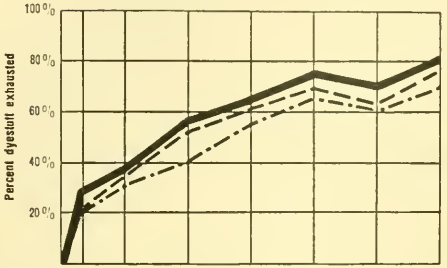
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Solophenyl Brown BGL Extra

(Data based on 1.8 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

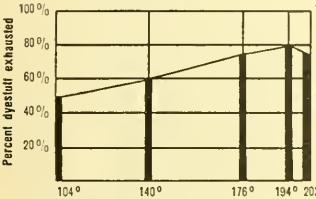
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

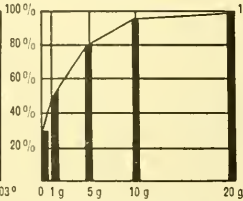
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



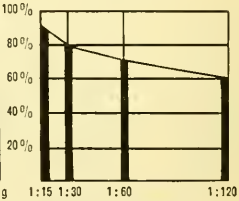
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

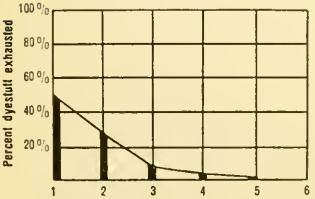
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

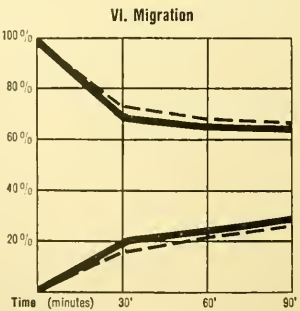
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

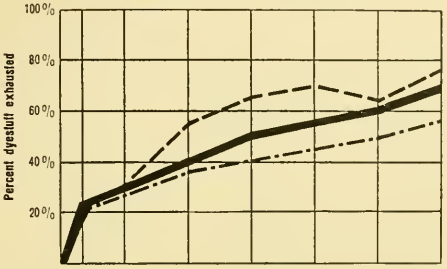
Dyestuff transferred to undyed yarn

Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Brown GRL

(Data based on 2.7 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

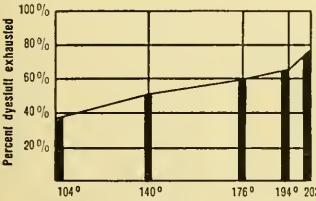
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

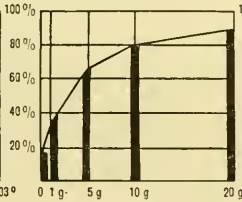


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



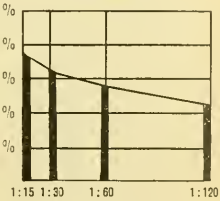
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

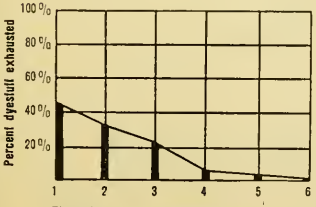
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



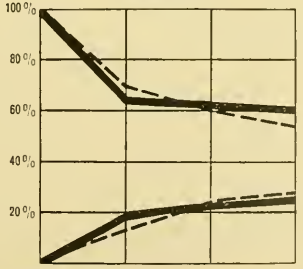
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Time (minutes)

Temperature : 194° F.

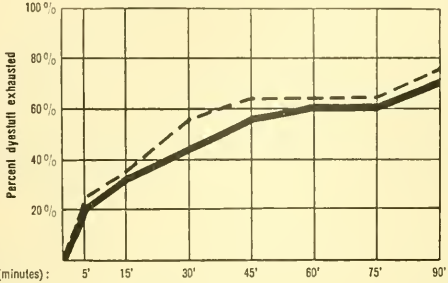
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Brown 2RL

[Data based on 1.5 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

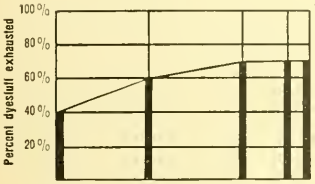
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

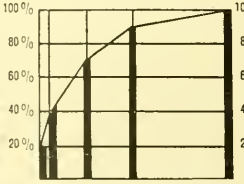
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



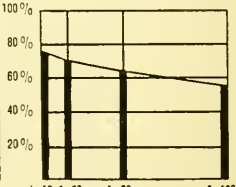
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

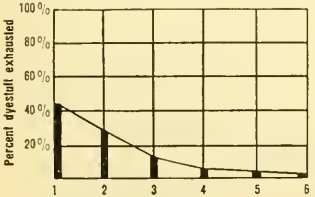
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

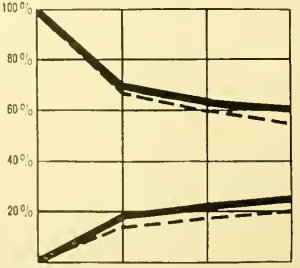
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

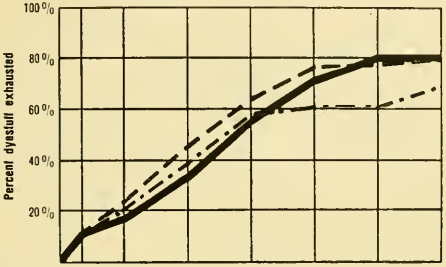
Dyestuff transferred to undyed yarn

Time (minutes) 30' 60' 90'
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Brown 8RL

(Data based on 1.4 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note: If curve c) is omitted, soda ash has no effect on the drawing

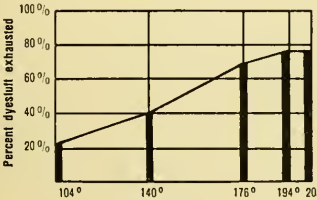
Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

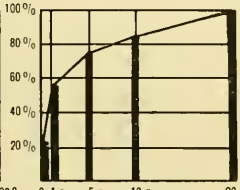


Time: 90 minutes for each dyeing

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

III. Salt



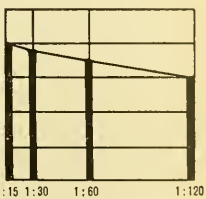
Grams of anhydrous Glauber's Salt per litre

Time: 90 minutes for each dyeing

Temperature: 194° F.

Liquor ratio: 1 : 30

IV. Liquor ratio



Time: 90 minutes for each dyeing

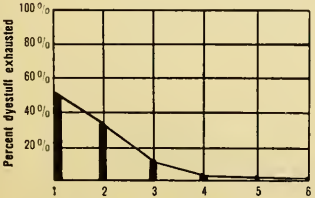
Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



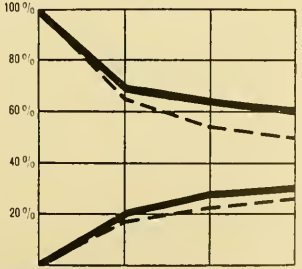
Time: 10 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature: 194° F.

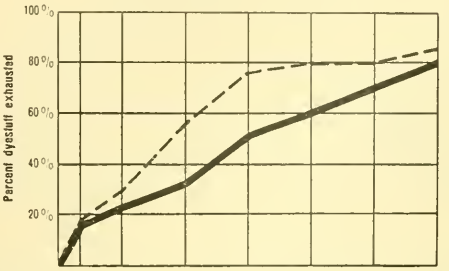
Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

Diphenyl Fast Brown BRL

[Data based on 1.8 %]

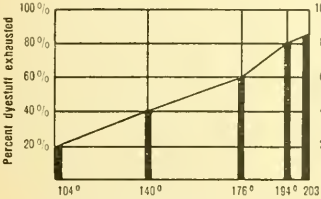
I. Drawing (Combining Time and Temperature)



Time (minutes) : 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

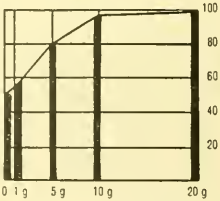
INFLUENCE ON EXHAUSTION

II. Temperature (F)



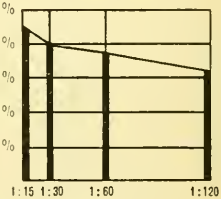
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

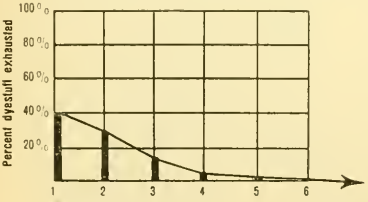
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

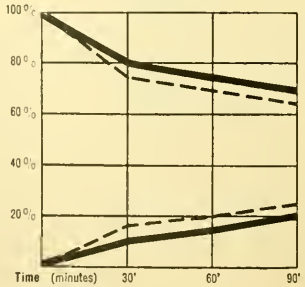
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2 – 6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

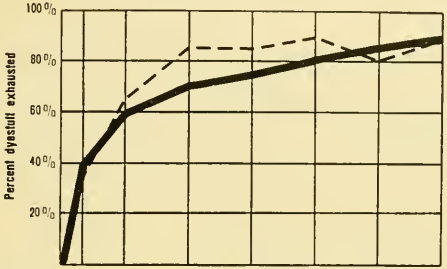


Time (minutes) 30' 60' 90'
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Brown F Extra

(Data based on 1.4 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

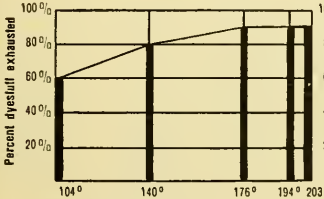
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

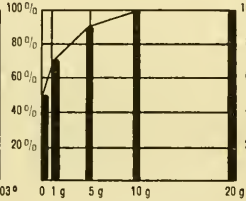


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



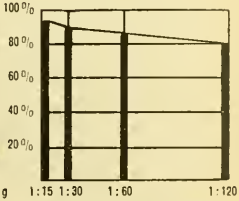
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

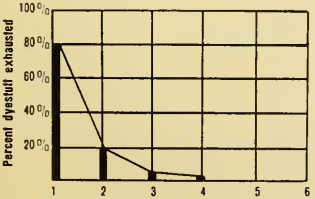
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



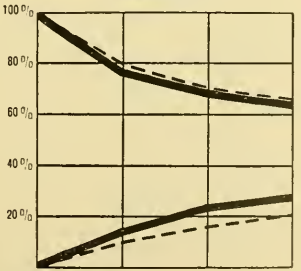
Time : 10 minutes for each dyeing

Temperature : 194° F

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

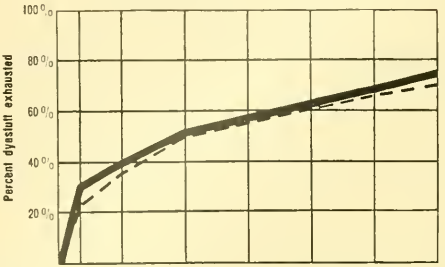
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Bronze GL

(Data based on 1.4 %)

I. Drawing (Combining Time and Temperature)



a) ——— Cotton yarn

b) — — — Bright Viscose Spun Yarn

c) —·—·— Same as a) with 0,5 g soda ash per litre of dyebath

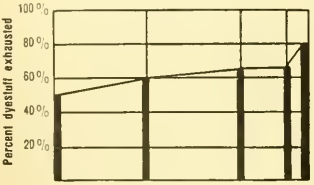
Note. If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

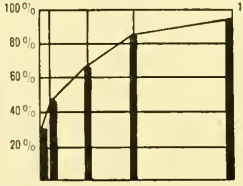
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



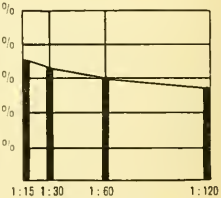
Time: 90 minutes for each dyeing
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time: 90 minutes for each dyeing
Temperature: 194° F.
Liquor ratio: 1 : 30

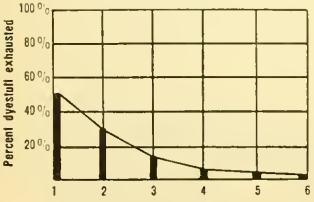
IV. Liquor ratio



Time: 90 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt

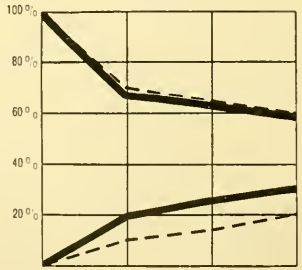
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time: 10 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

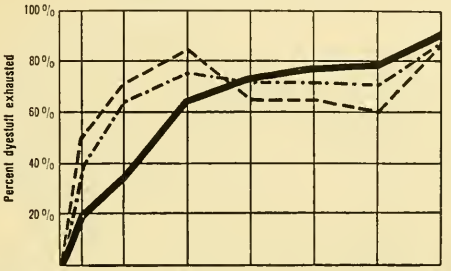
Dyestuff transferred to undyed yarn

Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

Cuprophenyl Yellow Brown RGL

(Data based on 3.5 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note: If curve c) is omitted, soda ash has no effect on the drawing

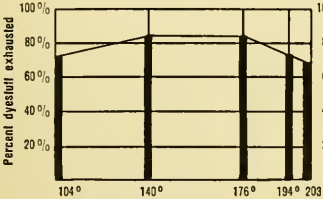
Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

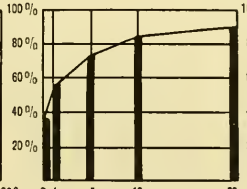


Time: 90 minutes for each dyeing

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

III. Salt



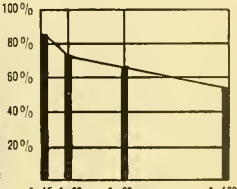
Grams of anhydrous Glauber's Salt per litre

Time: 90 minutes for each dyeing

Temperature: 194° F.

Liquor ratio: 1 : 30

IV. Liquor ratio



Time: 90 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of enhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings

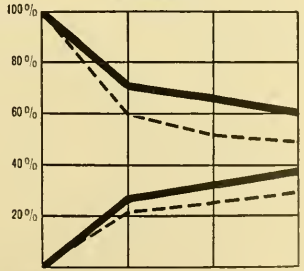
Time: 10 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

VI. Migration



Temperature: 194° F.

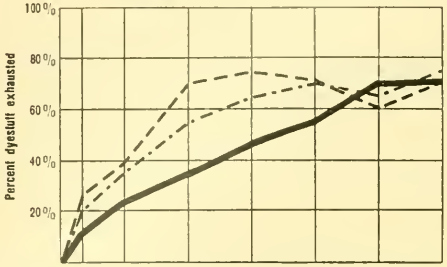
Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

Cuprophenyl Brown GL

(Data based on 3.3 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

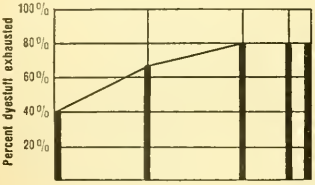
Note: If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

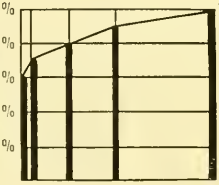
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



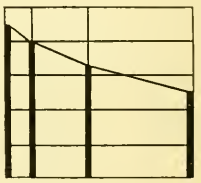
Time: 90 minutes for each dyeing
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time: 90 minutes for each dyeing
Temperature: 194° F.
Liquor ratio: 1 : 30

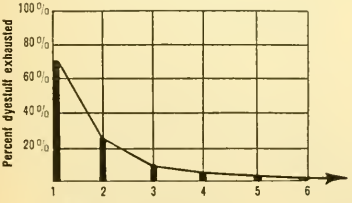
IV. Liquor ratio



Time: 90 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt

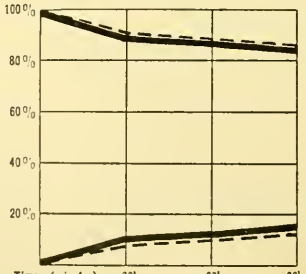
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = Initial dyeing, 2—6 = successive dyeings



Time: 10 minutes for each dyeing
Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

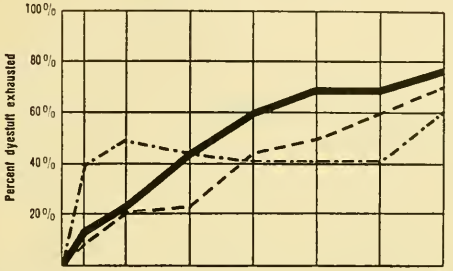
Dyestuff transferred to undyed yarn

Temperature: 194° F.
Salt: 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio: 1 : 30

Cuprophenyl Brown 2GL

(Data based on 2.5 %)

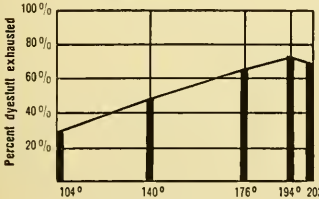
I. Drawing (Combining Time and Temperature)



Time (minutes): 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

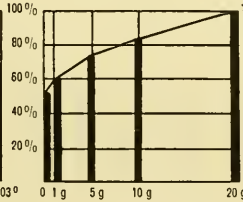
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



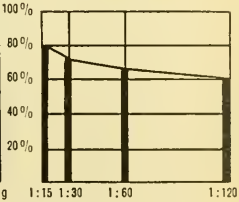
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

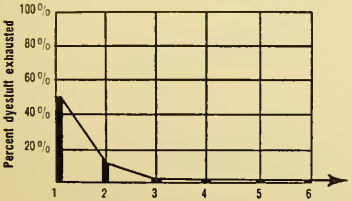
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

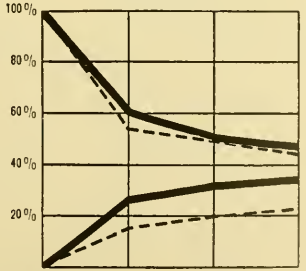
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

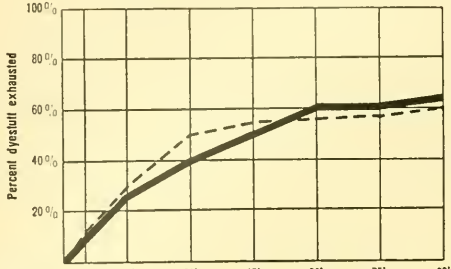


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Cuprophenyl Brown 2RL

[Data based on 2.7 %]

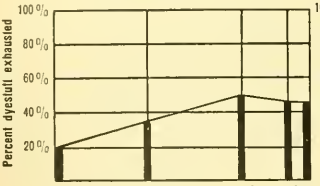
I. Drawing (Combining Time and Temperature)



Time (minutes): 5' 15' 30' 45' 60' 75' 90'
Temperature : (F.) 104° 140° 176° 194° 194° 203° Steeped to 158°
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

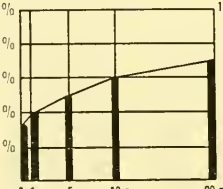
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



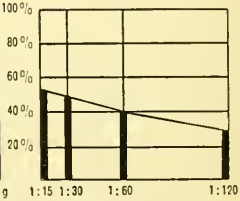
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

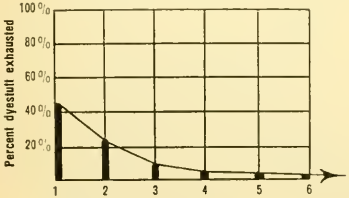
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

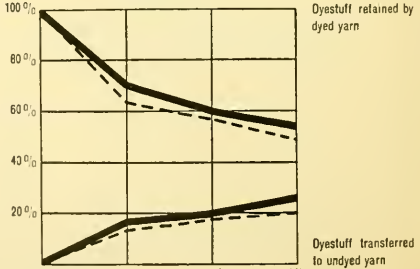
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2–6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

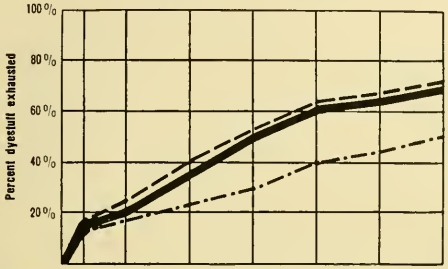


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Solophenyl Grey 4GL

(Data based on 3 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : It curve c) is omitted, soda ash has no effect on the drawing

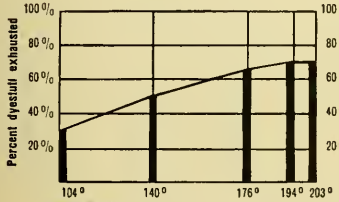
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

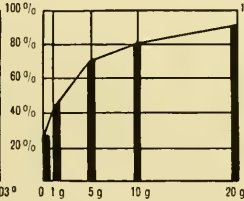


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



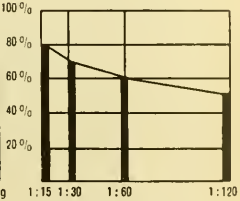
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

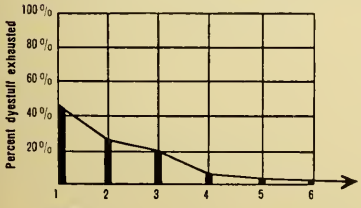
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



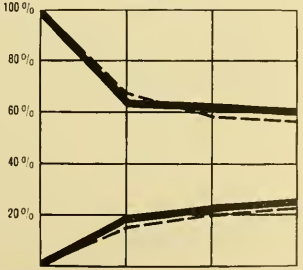
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

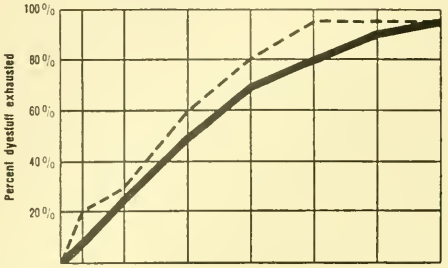
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Cuprophenyl Grey 2BL 300%

[Data based on 1 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

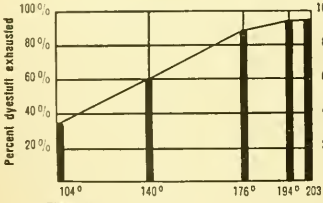
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

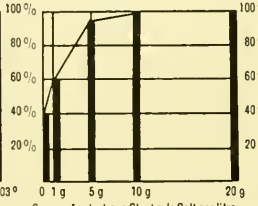


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



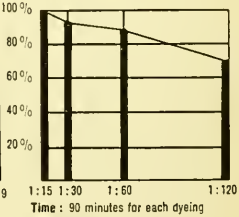
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings

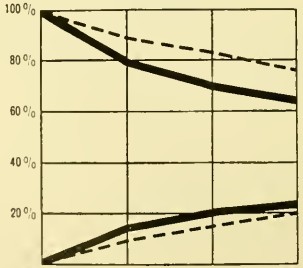
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

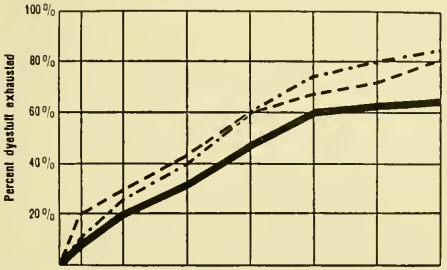
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Cuprophenyl Grey GRL

(Data based on 2.5 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note If curve c) is omitted, soda ash has no effect on the drawing

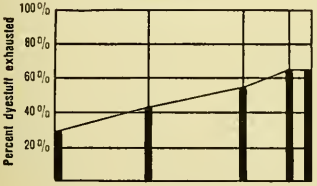
Time (minutes):	5'	15'	30'	45'	60'	75'	90'
Temperature: (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

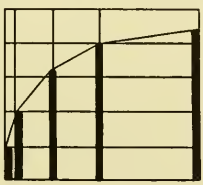


Time: 90 minutes for each dyeing

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

III. Salt



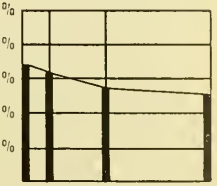
Grams of anhydrous Glauber's Salt per litre

Time: 90 minutes for each dyeing

Temperature: 194° F.

Liquor ratio: 1 : 30

IV. Liquor ratio



Time: 90 minutes for each dyeing

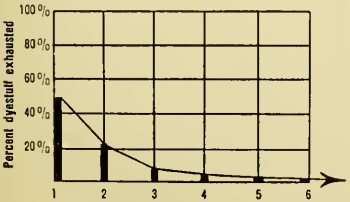
Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



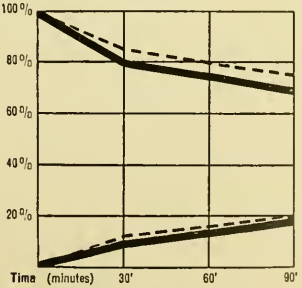
Time: 10 minutes for each dyeing

Temperature: 194° F.

Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

VI. Migration



Temperature: 194° F.

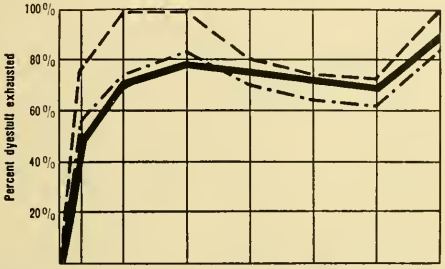
Salt: 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio: 1 : 30

Diphenyl Fast Black L Extra

(Data based on 2.4 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

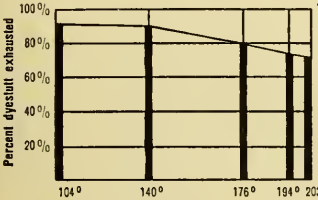
Note : If curve c) is omitted, soda ash has no effect on the drawing

Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

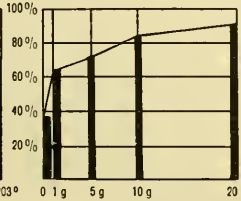
INFLUENCE ON EXHAUSTION

II. Temperature (F.)



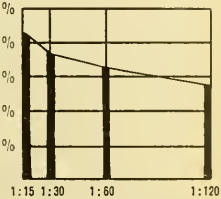
Time : 90 minutes for each dyeing
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

III. Salt



Grams of anhydrous Glauber's Salt per litre
Time : 90 minutes for each dyeing
Temperature : 194° F.
Liquor ratio : 1 : 30

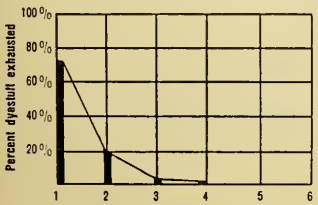
IV. Liquor ratio



Time : 90 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt

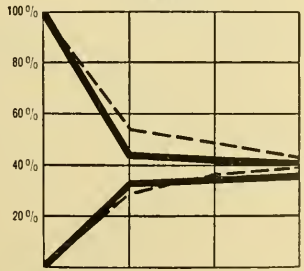
V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion
1 = initial dyeing, 2—6 = successive dyeings



Time : 10 minutes for each dyeing
Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

VI. Migration

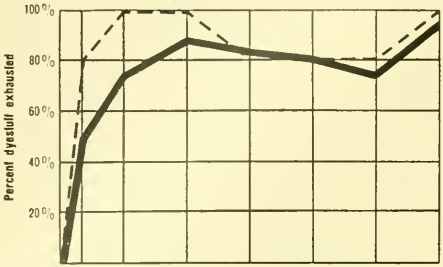


Temperature : 194° F.
Salt : 5 grams per litre of anhydrous Glauber's Salt
Liquor ratio : 1 : 30

Diphenyl Fast Black L New Supra

(Data based on 0.8 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is emitted, soda ash has no effect on the drawing

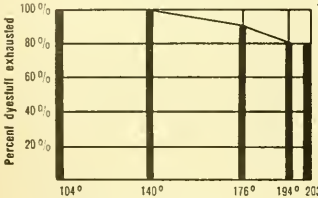
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

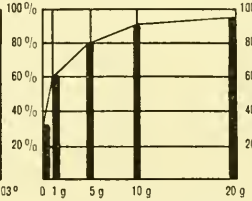


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



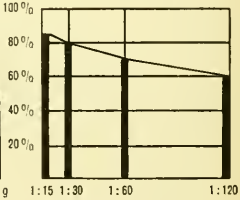
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

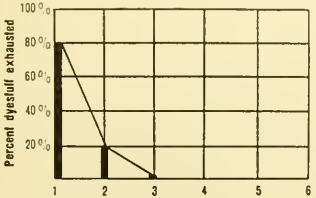
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



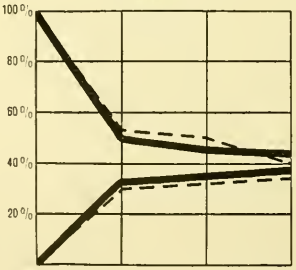
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Dyestuff retained by dyed yarn

Dyestuff transferred to undyed yarn

Temperature : 194° F.

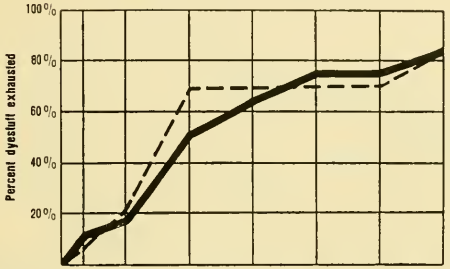
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Diphenyl Fast Grey B Conc.

(Data based on 1.5 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

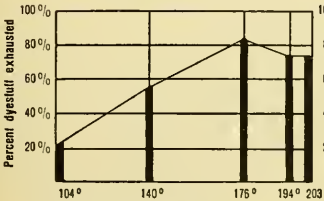
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

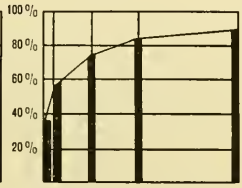


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



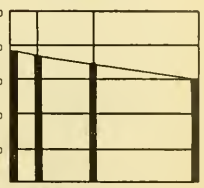
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F.

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings

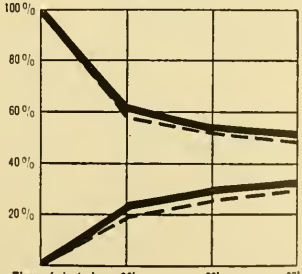
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

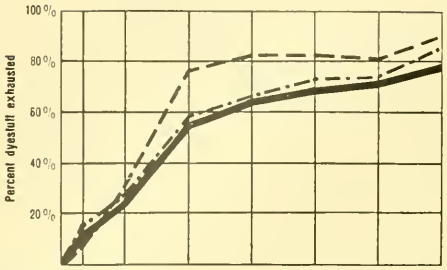
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Formal Fast Black G Supra I

(Data based on 4.5 %)

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebath

Note : If curve c) is omitted, soda ash has no effect on the drawing

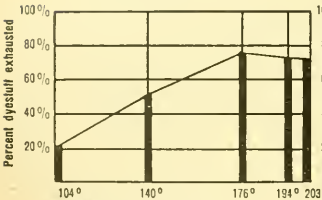
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steeped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

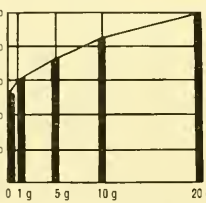


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



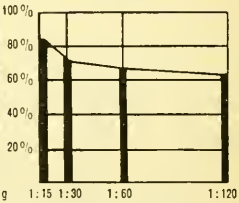
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings

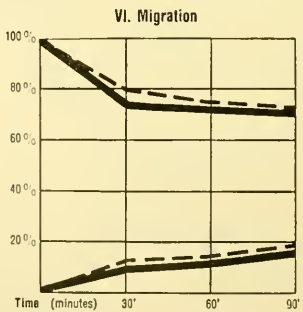
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

VI. Migration



Temperature : 194° F.

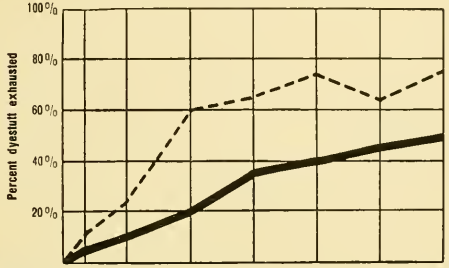
Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

Cuprophenyl Black RL 200%

[Data based on 5.5 %]

I. Drawing (Combining Time and Temperature)



a) Cotton yarn

b) Bright Viscose Spun Yarn

c) Same as a) with 0,5 g soda ash per litre of dyebeth

Note : It curve c) is omitted, soda ash has no effect on the drawing

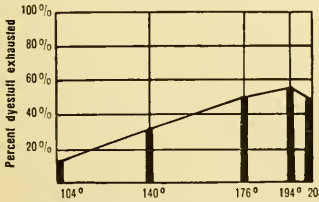
Time (minutes) :	5'	15'	30'	45'	60'	75'	90'
Temperature : (F.)	104°	140°	176°	194°	194°	203°	Steaped to 158°

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

INFLUENCE ON EXHAUSTION

II. Temperature (F.)

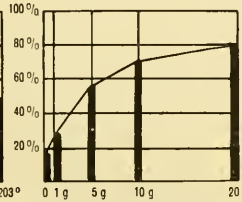


Time : 90 minutes for each dyeing

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

III. Salt



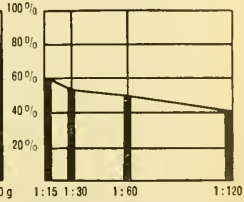
Grams of anhydrous Glauber's Salt per litre

Time : 90 minutes for each dyeing

Temperature : 194° F

Liquor ratio : 1 : 30

IV. Liquor ratio



Time : 90 minutes for each dyeing

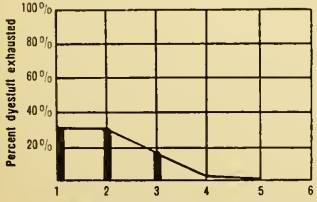
Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

V. Rate of exhaustion

measured by successive dyeings in the same dyebath until complete exhaustion

1 = initial dyeing, 2—6 = successive dyeings



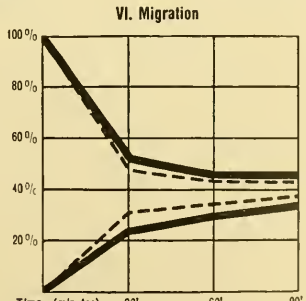
Time : 10 minutes for each dyeing

Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30

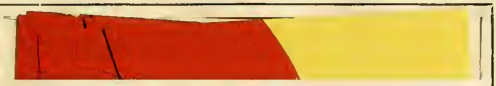
VI. Migration



Temperature : 194° F.

Salt : 5 grams per litre of anhydrous Glauber's Salt

Liquor ratio : 1 : 30



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